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CTO

The Magazine for Information Executives

**QUICK WIN
SOFTWARE**
Reaping Real
Rewards, Avoiding
All-Too-Real Traps
Page 68

**I.T. JOINS
THE CIRCUS**
And Enables
Cirque du Soleil
to Barnstorm
the World
Page 96

American CIO
Monte Ford

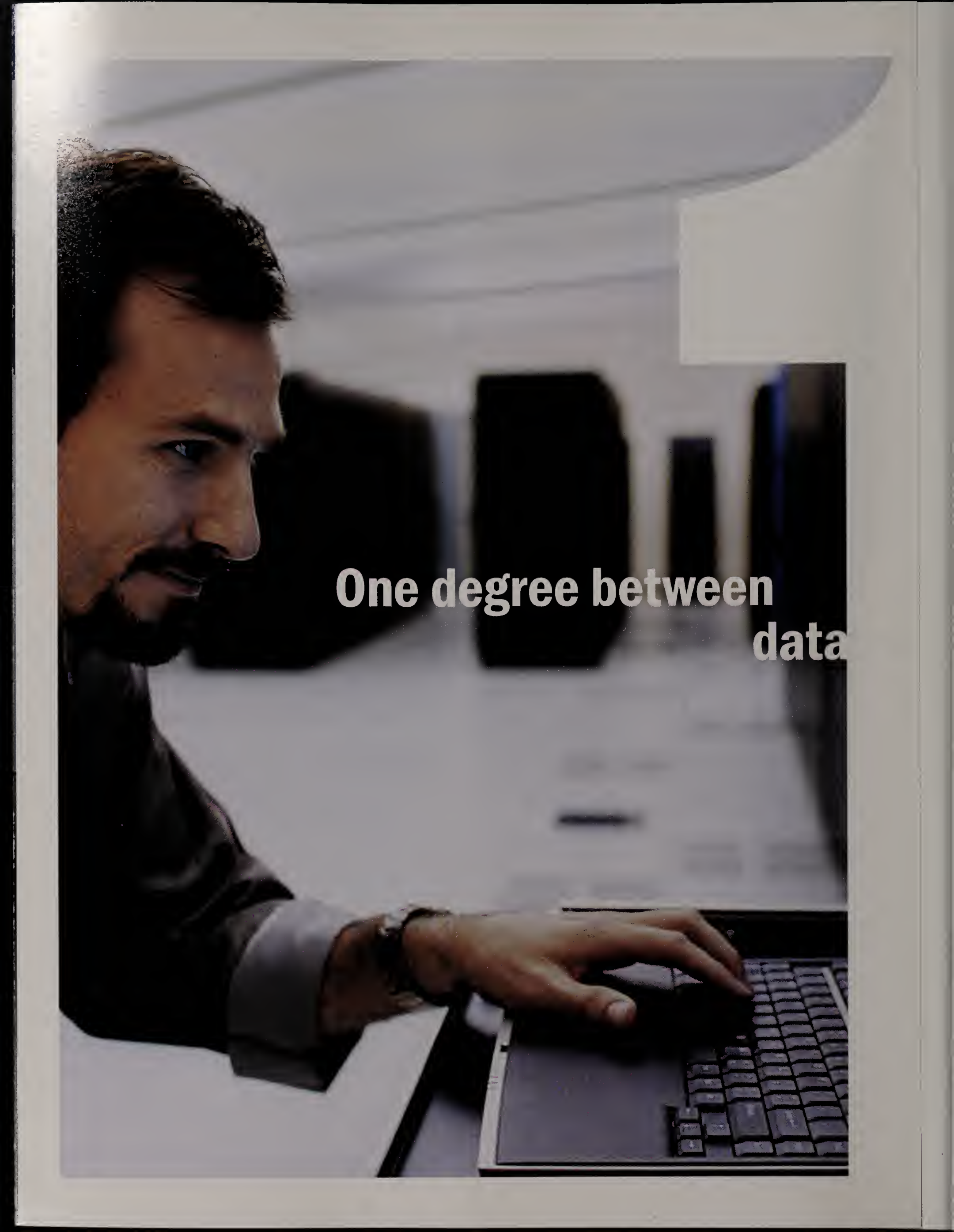
**The World's Biggest
Airline Bets on IT** Page 56

Honored as
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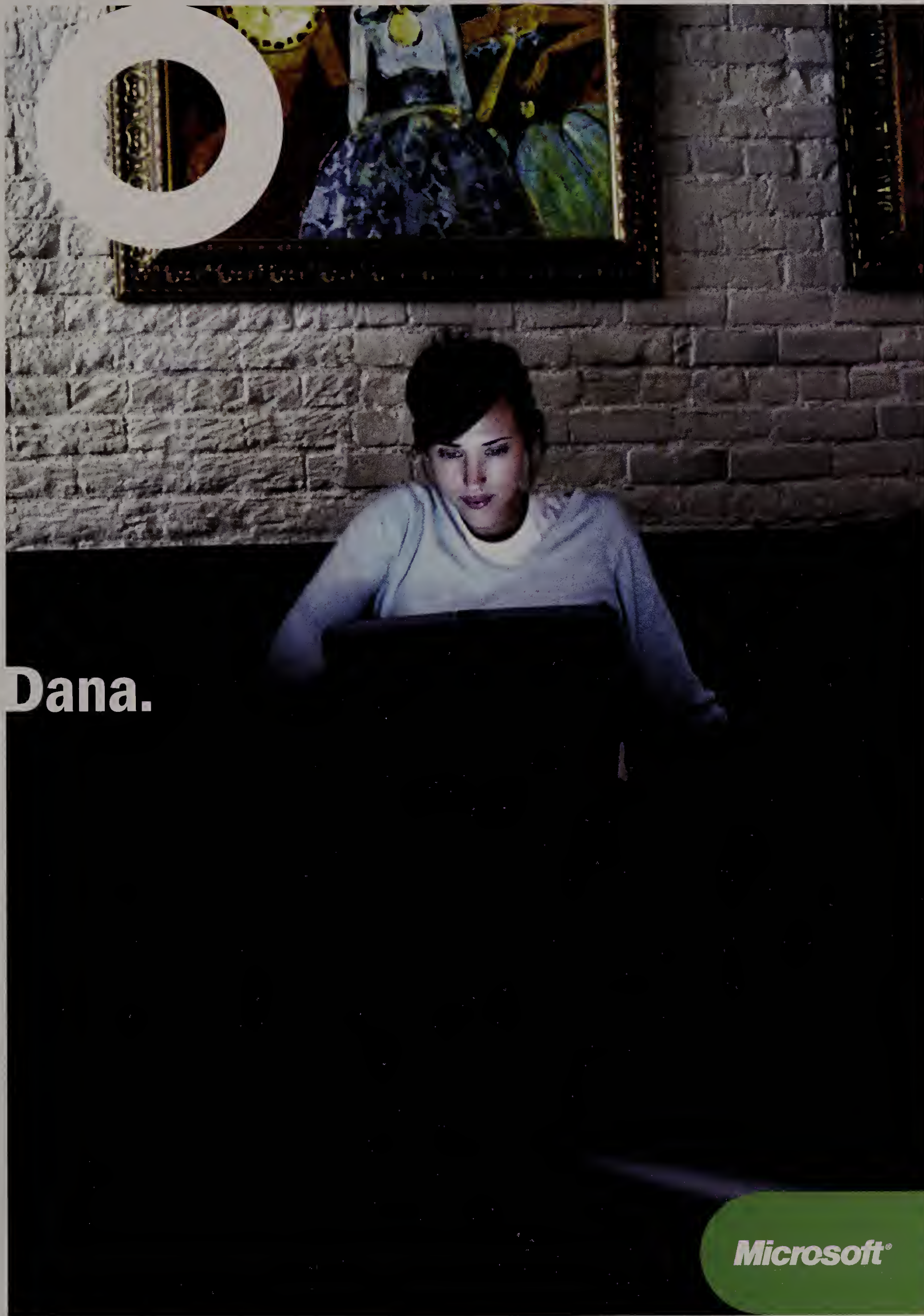
**CAN AMERICAN KEEP
FLYING?**

PLUS

How AA Integrated
TWA's Computer
Systems Page 66

A man with a beard and mustache, wearing a dark suit and a watch, is shown in profile, looking intently at a computer screen. His right hand is on a computer mouse. The background is a server room with rows of server racks. The text "One degree between data" is overlaid on the image.

**One degree between
data**



and Dana.

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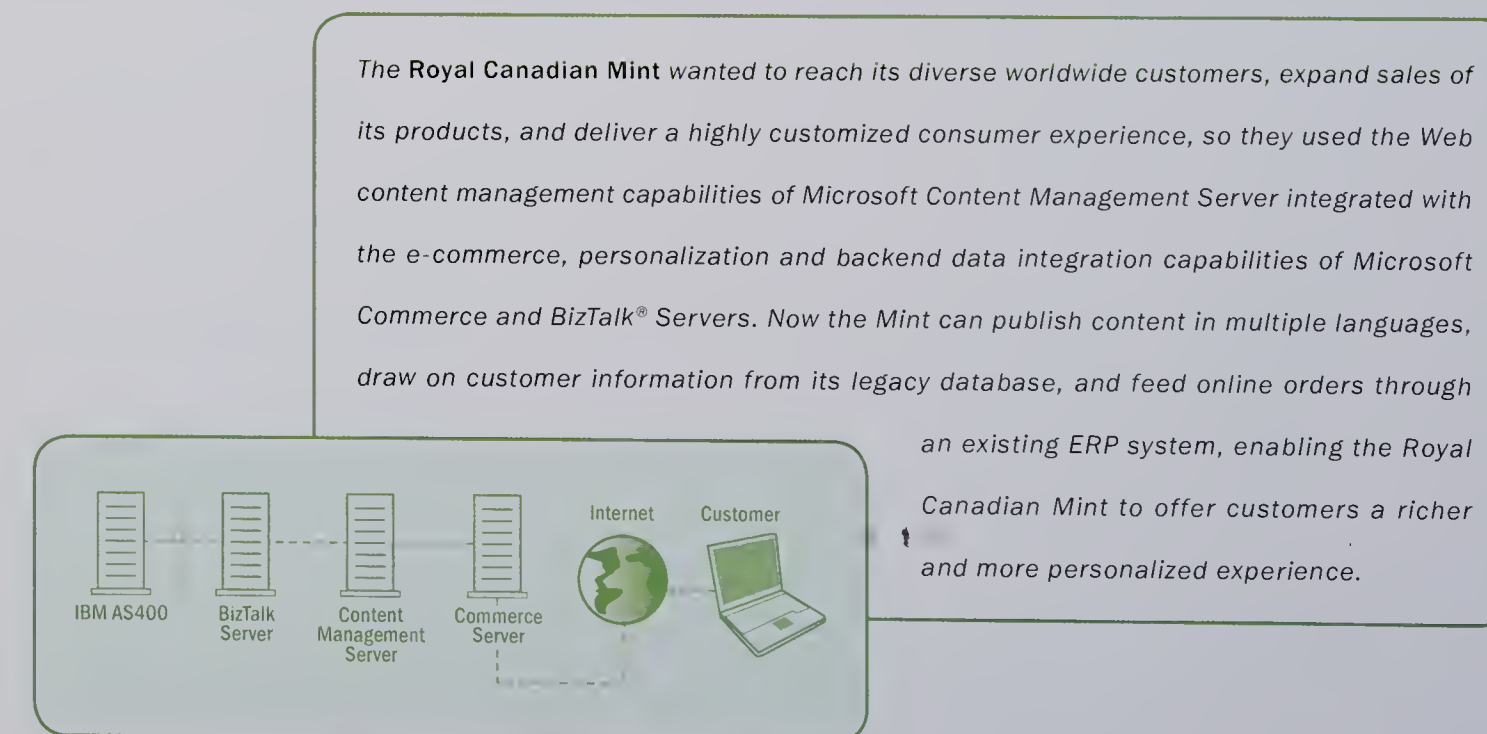


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To open a new sales and communications channel to its dealers and end users, Volvo Construction Equipment (VCE), a leading manufacturer of construction equipment, wanted to launch its new compact product line electronically.

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Accenture worked closely with VCE to develop the company's eBusiness strategy and introduce a B2B dealer portal and consumer website. By making it easier for dealers to do business with VCE and for consumers to do business with dealers, the project is expected to reduce operating costs by \$20 million over the next five years.



To eliminate the technological barriers to business-to-business and business-to-marketplace data exchange in the global chemical industry, leading chemical companies and other major industry players came together to define and promulgate a set of open transaction standards in XML, the language of eCommerce.

I am the Chemical Industry's idea, delivered. Accenture brought deep industry knowledge and strong project management skills to the Chemical eStandards Initiative™. The new standards, published in January 2001, are simplifying transactions between companies, customers and eMarkets, and will provide a foundation for tomorrow's online services.



In delivering on its commitment to customer service and providing innovative physical and electronic delivery solutions, Canada Post wanted to fundamentally re-engineer the way it manages internal processes and does business with

customers and suppliers. **I am Canada Post's idea, delivered.** Building on a long-standing relationship, Canada Post partnered with Accenture to embark on a business transformation program to re-engineer key business functions based on an SAP-based enterprise solution to improve customer experiences, allow employees to focus on value-generating activities, and enable paperless procurement and workflow.



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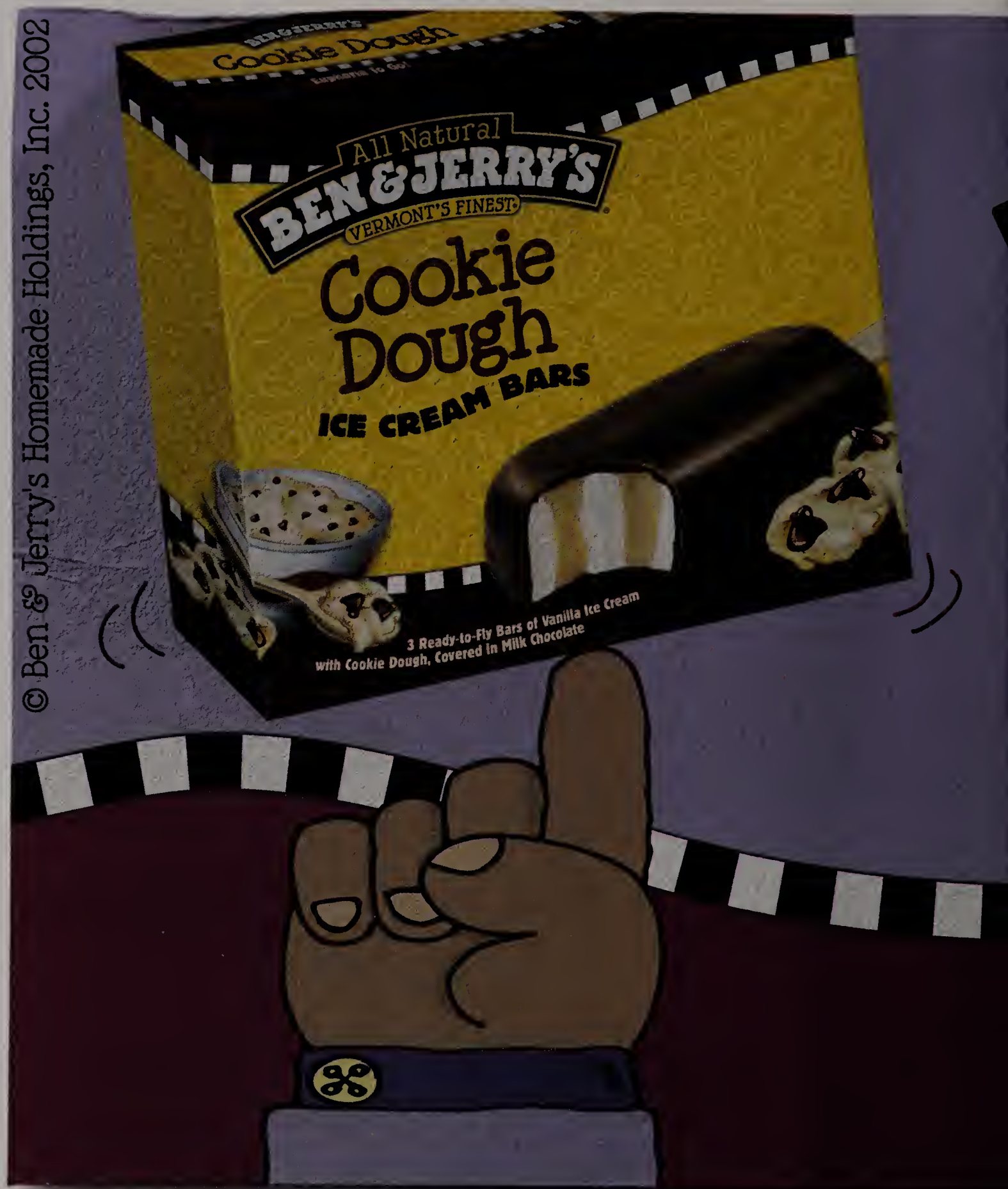
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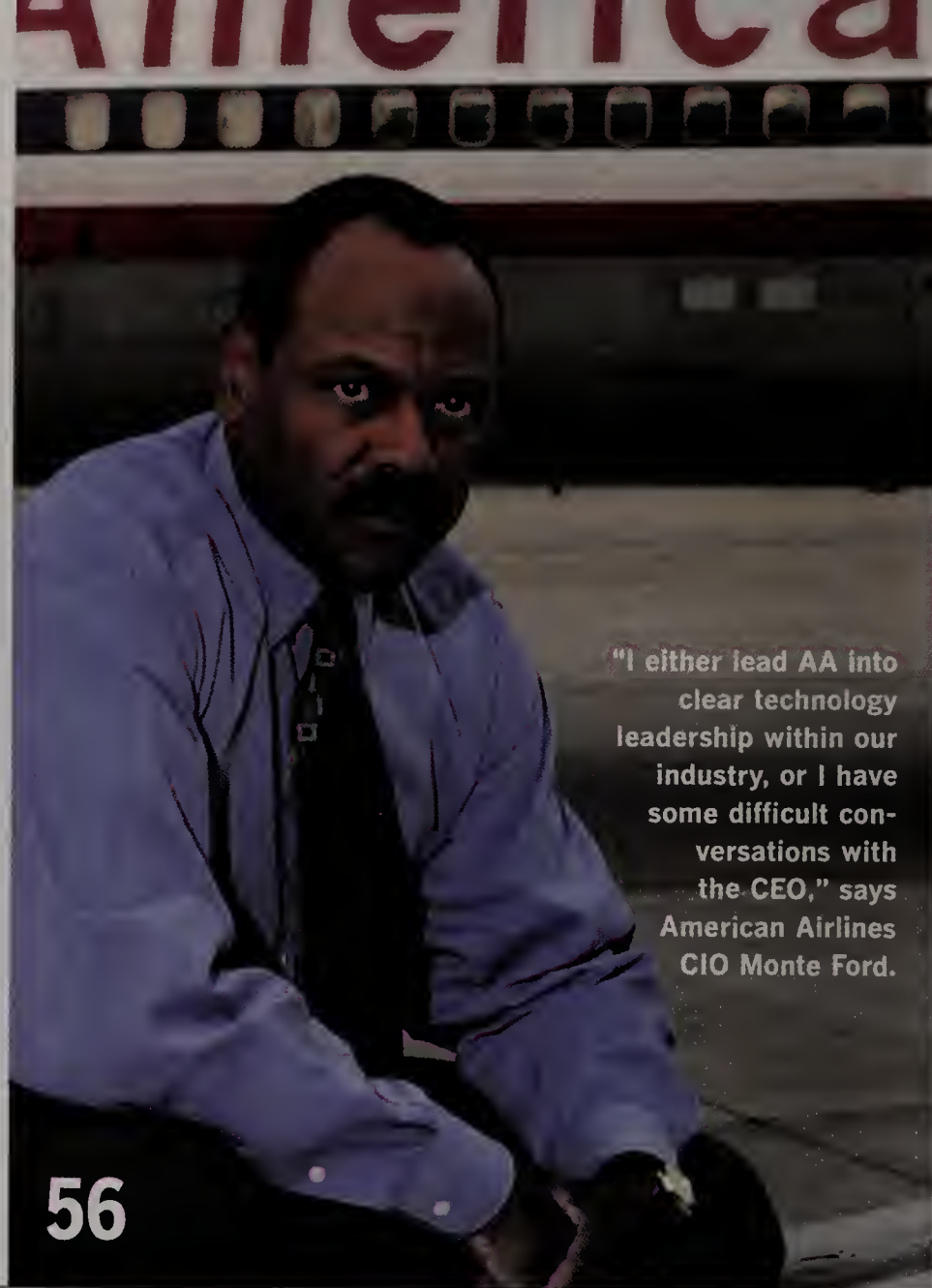
Cover Story

CHANGE MANAGEMENT | 56

Can American Keep Flying?

CIO Monte Ford landed at American Airlines in late 2000 charged with rebuilding IT. Now he's got a bigger job: Help restore the world's biggest airline to profitability. *By Todd Datz*

COVER PHOTO BY CHET SNEDDEN



"I either lead AA into clear technology leadership within our industry, or I have some difficult conversations with the CEO," says American Airlines CIO Monte Ford.

Features

I.T. PAYBACK

Overachiever | 68

How with a little money and a lot of smarts, quick win software can fetch huge rewards. *By David L. Margulius*

PRIVACY

How to Meet Tomorrow's Privacy Rules Today | 76

When it comes to preparing for impending security regulations, health-care CIOs have some simple advice: Act now.

By Ben Worthen

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Portal U. | 85

How to connect students, faculty, staff, alumni and businesses so that they can share the school's services, research and applications? Go for the gateway approach. *By Meridith Levinson*

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To Bill or Not to Bill (Online) | 91

Digital invoicing is the next big step in e-business transactions.

By Elana Varon

RAPID DEPLOYMENT

The Amazing Traveling IT Show | 96

Cirque du Soleil is more than aerial acrobatics and gymnastic symmetry. Behind the scenes, an information technology tour de force keeps the show running smoothly. *By Alice Dragoon*

MORE ►►►



"The best way to manage change is to deliver," says Cirque du Soleil VP of IT **Danielle Savoie**. Read how she manages her IT systems and rolls out new technologies on the go. After all, as she says, "The show must go on perfectly."

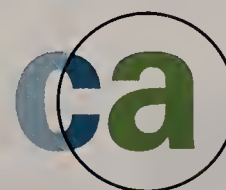


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PEER TO PEER How to Solve the Headcount Problem | 44

Staying flexible with job descriptions is one way to get around headcount restrictions. The CIO of Hygeia tells us how.
By Rod Hamilton

SCHRAGE Pilot Pathology | 48

If you can't easily scale a pilot technology, don't bother installing it in the first place.
By Michael Schrage

CXO PERSPECTIVES A CRM Success Story | 50

The CEO of Boise Office Solutions suggests that giving customers greater economic value might just lead to a better ending. *By Christopher Milliken*

Sections

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BY THE NUMBERS | 34

When it comes to security, the first line of defense is your staff.

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CIOs on the go—see where your IT peers are working now.



"The corporate landscapes of Fortune 1000 firms are cluttered with the digital bones of IT pilot projects that couldn't, wouldn't and shouldn't scale."

—Michael Schrage, on implementing pilot technology projects Page 48

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Your Guide to Managing

Eight Strategies for Coaching Divisional CIOs

How one corporate CIO persuades rather than commands. *By Alice Dragoon*

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Turn techs into execs: How to develop leadership skills.

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You can never be smarter than your customer. *By Susan H. Cramm*



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Instant messaging software goes corporate.
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SecuriKey adds safety to laptops.

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Beyond broadband—ultrawideband. But when will it arrive?

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Wireless carriers and software vendors are headed for a showdown.

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Now it's time to find the real value in your existing IT investments.
By Abbie Lundberg

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These are the 23 leaders who *CIO* uses as a sounding board.

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Abstracts of all the feature stories found in this issue.

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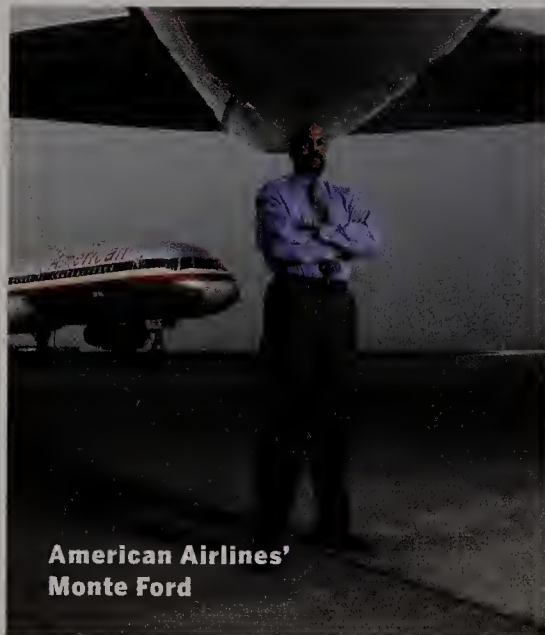
WEB >connections

Interactive features from November 1 to November 14

TALK BACK

Can IT save the airlines?

American Airlines has its back against the wall (see Page 56). "All of the things we have to do have technology at the center of them," says Monte Ford, American's senior vice president and CIO. Do you think technology can rescue American? Let us know what you think.



JOIN THE CONVERSATION

Ready or not for e-payments

E-billing is ready for you (see **To Bill or Not to Bill (Online)**, Page 91), but are you, your partners and your bank ready for fully digital invoicing? Read "Ready or Not for E-Payments" online in our E-Business Research Center and join the conversation.

Find links to the stories mentioned above in the **WEB CONNECTIONS** box at www.cio.com.

WEIGH IN

First, don't call it a quick win

That's the advice of Royal Caribbean Cruises CIO Tom Murphy (**Overachiever**, Page 68), who also created a "quick wins" team within his IT department. What are your secrets for getting fast IT returns for little money?

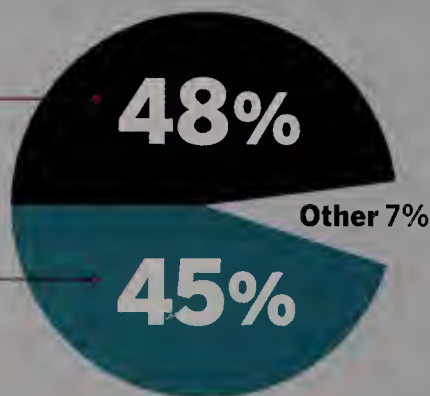
CIO Quick Poll Results

Linux Looms Large(ish)!

A recent CIO.com Quick Poll asked: Five years from now, which operating system will dominate corporate systems? Your answers showed:

Linux
gaining a slim but fascinating lead

Microsoft
products hanging in there, but for how long?



Check out our new poll each week at www.cio.com/poll.

The Darwinmag Connection

Do your nontechnology colleagues need a brain boost? If you're trying to spread the word about **Portal U.** (see Case Files, Page 85), you might want to start with the basics. Go to www.darwinmag.com to find **What Is a Portal?** and get your argument off the ground.

Greater Security

If this issue's **How to Meet Tomorrow's Privacy Rules Today** (Page 76) has piqued your interest in federal privacy regulations, check out the **Politics & Privacy** page on the website of CIO's newest sister publication, CSO, the resource for security executives. Check out www.csoonline.com/politics.

Our Daily Web

MONDAY Tech Tact Tracking what's next.

TUESDAY

Alarmed Security experts Sarah D. Scalet and Scott Berinato give you something new to worry about.



WEDNESDAY

Metrics Making sense of the numbers.



THURSDAY Sound Off Tackling ethical dilemmas.

FRIDAY The Big Picture Charting the graphs

Vision Critical.

What does it take to turn an obstacle into a benchmark victory? Most executives answer "Vision."

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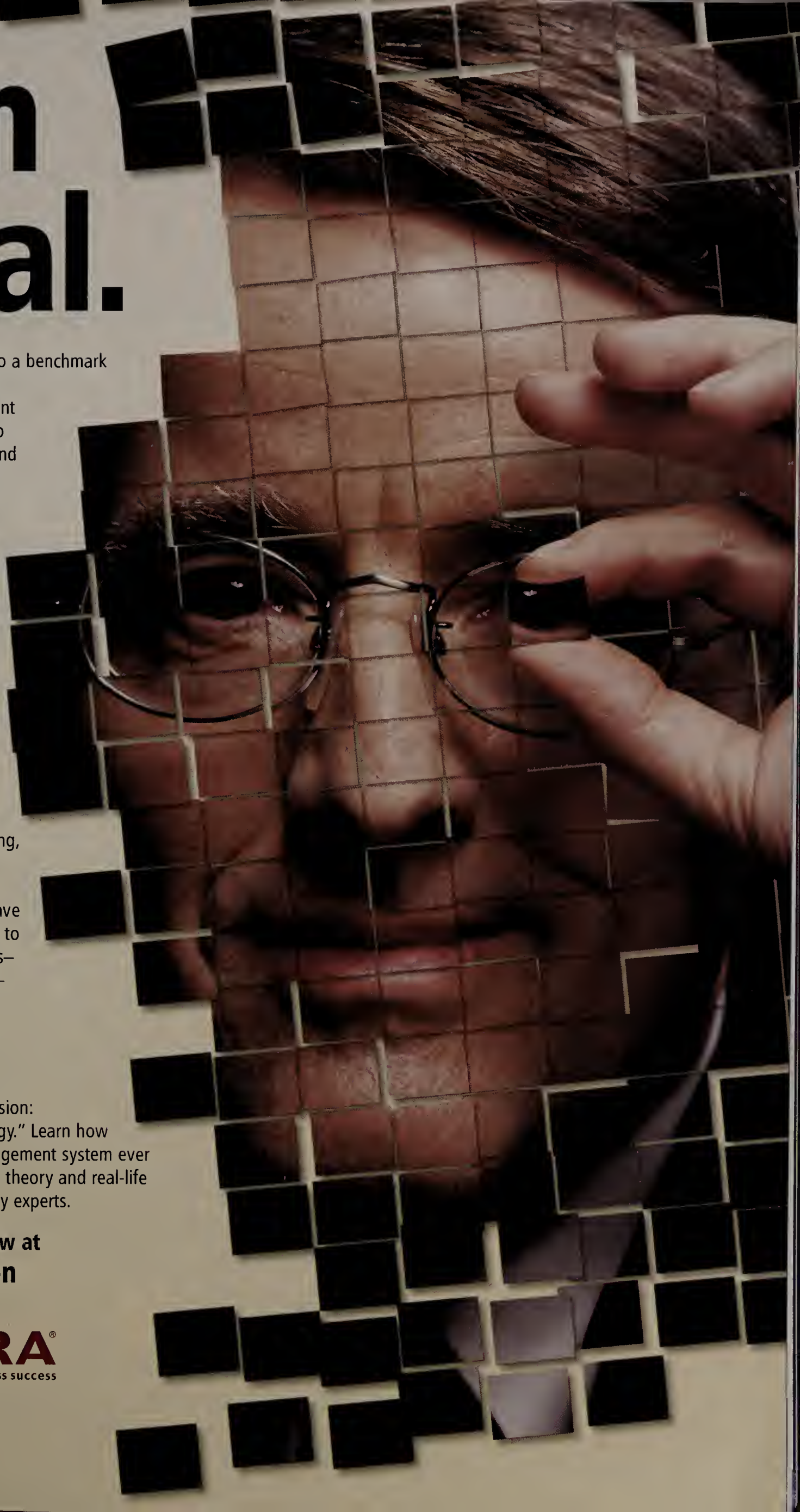
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SURPRISINGLY, MOST AGAINST LIFE'S UNPRE

BUT NOT THE PREDICTABLE ONES.



According to leading industry analysts, over 15% of laptops are lost, stolen or suffer hardware failure each year. With up to 40GB hard drives common these days, that's a lot of data at risk. Yet most companies still only think of backing up their servers. Which leaves all that data on all those PCs vulnerable. (And don't even get us started on the perils from hackers, viruses, losses, and user errors.)

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From the Editor

lundberg@cio.com



How are you getting by with little or no money in the IT investment budget? If you have some advice for your peers, Weigh In with your thoughts and comments at comment.cio.com/weighin.

The Way Out

NUMBER ONE ON CIOs' to-do lists these days: Help get company out of the doldrums! The past year has been focused on squeezing out costs—by rationalizing the infrastructure and putting the screws to vendors (one CIO I know claims to have saved \$50 million this way)—and seeking quick wins through low-cost, quick-return investments (for examples, see “Overachiever,” Page 68).

That was the easy part. The real work now is to find the value add in existing investments—to make them fully deliver on their promise. That requires additional investment—a nonstarter in 2002. Fortunately, a lot of this investment will come in the way of fine-tuning what’s already been installed.

W. Brian Arthur, an economist working out of the Santa Fe Institute, compares the current state of IT to the early days of the automobile’s development. As a base technology, cars didn’t gain widespread acceptance when they first rolled off the assembly line in the early 1900s. It wasn’t until they were enhanced for greater reliability, comfort and safety, and the infrastructure of highways, bridges and gas stations was in place decades later that they became a regular part of the American landscape. Arthur calls these supporting systems “arrangement of use” technologies. For cars, these were the electronic ignition, reliable brakes, headlights, windshield wipers. For IT, think about bandwidth, security, integration tools and any technologies that will make the technology experience easier and more reliable.

The faster CIOs can optimize their technology infrastructures for high-impact business activities, the quicker they’ll start the upward climb. The trouble is, executives (business and IT) are seriously risk-averse these days. There’s a tendency to 1. stick with the low-risk quick wins and 2. for anything new, wait for the big, established vendors to develop solutions. Remember the expression, “No one ever got fired for buying IBM”? CIOs are invoking it again.

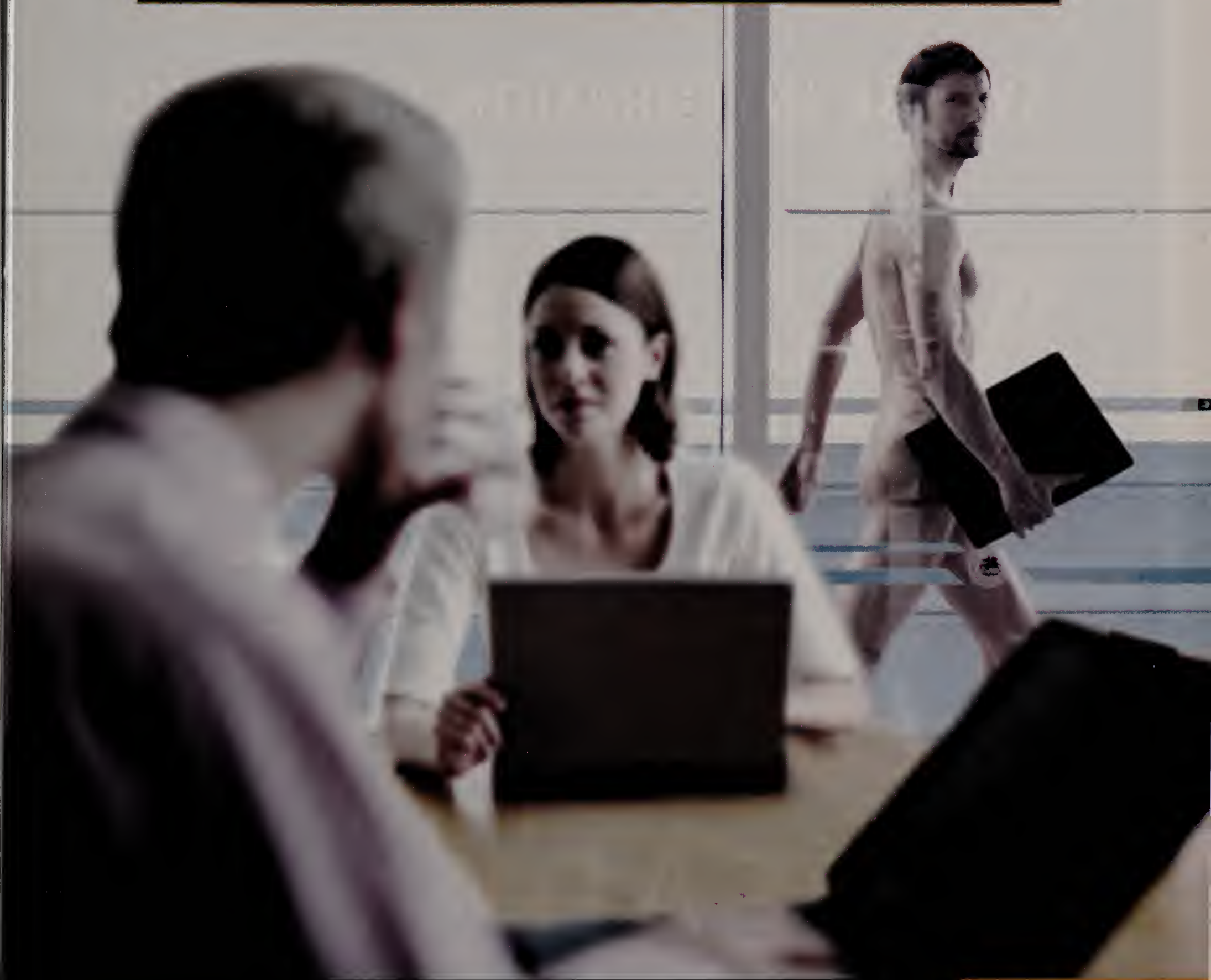
Two things must happen for us to jump-start this build-out of supporting systems. First, the big vendors have to make their technology work better. American Airlines CIO Monte Ford convened his top dozen providers and told them that if they worked with him to innovate and simplify the company’s technology systems (even if it meant reducing their revenue streams), they’d be rewarded; if they didn’t, they’d be out (see “Can American Keep Flying?” by Senior Editor Todd Datz on Page 56).

Second, CIOs must overcome their fear of dealing with new companies. Many of these “arrangement of use” technologies are by definition narrowly focused niche applications. Small companies with low overhead and more focused attention may be able to come up with solutions more quickly and at lower cost than the heavyweights, however dependable and reliable the latter might be. And while risk might be statistically higher for new companies, there are enough examples of big companies in trouble these days that it’s foolish to equate size with stability and staying power.

Allie Lundberg

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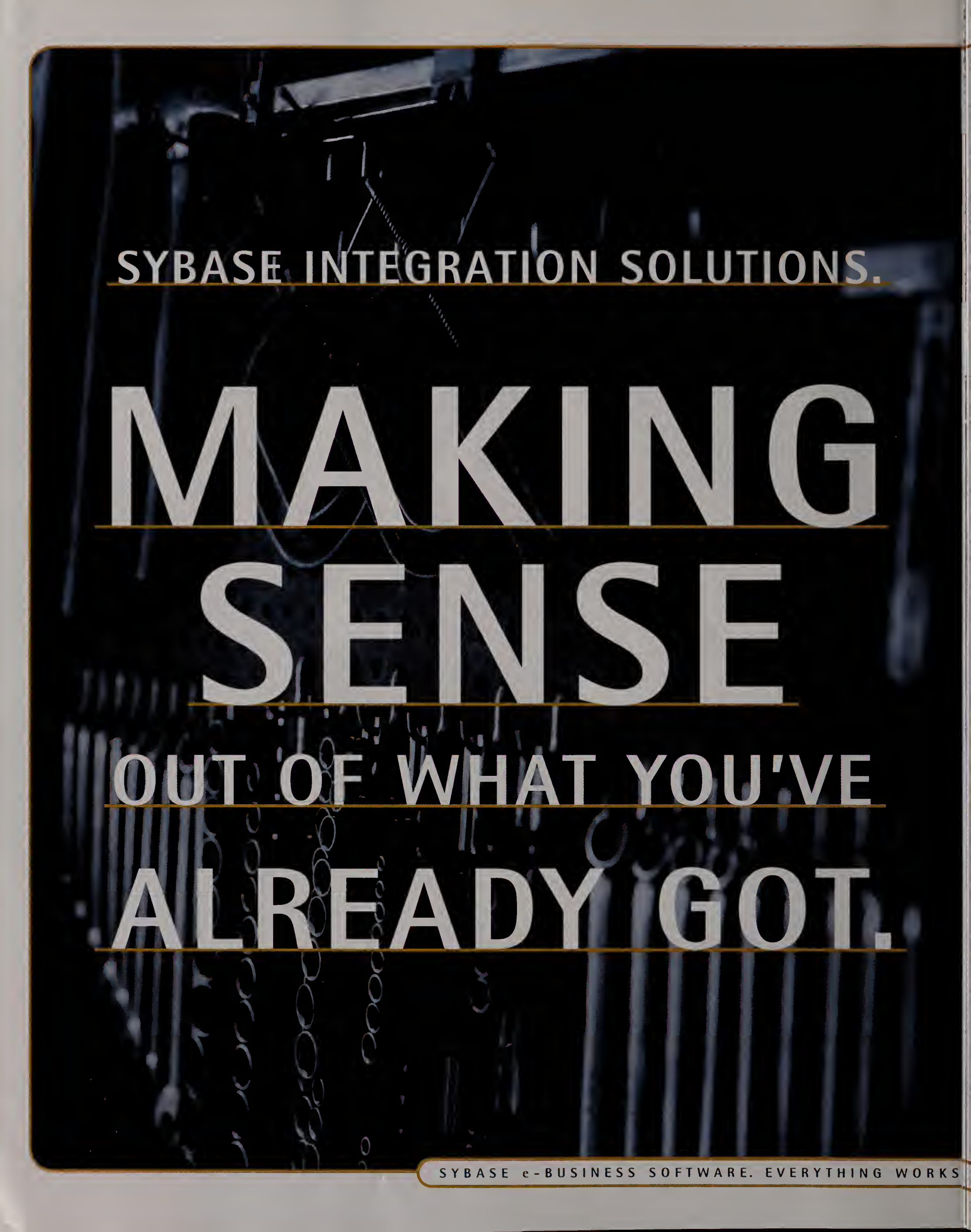
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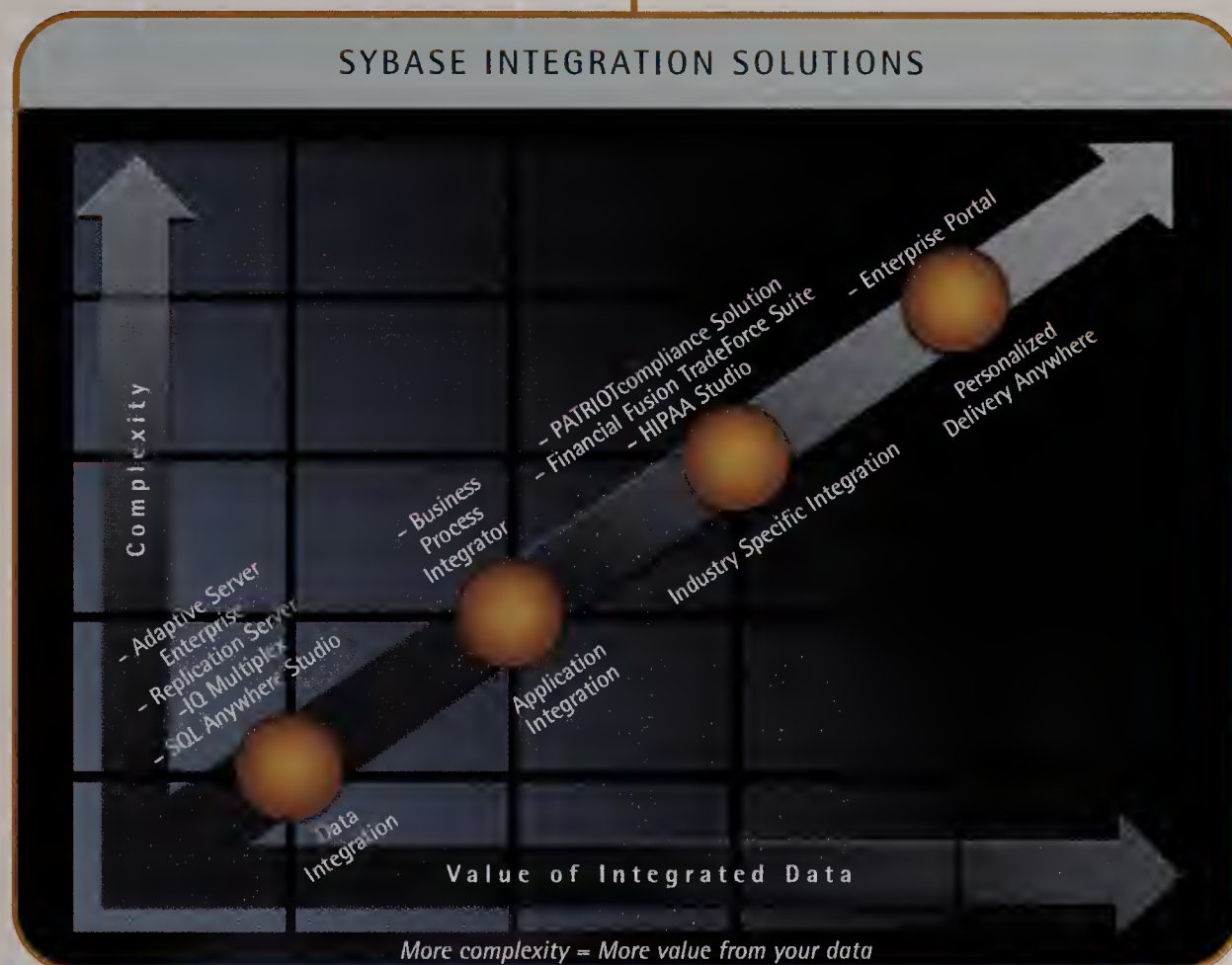
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InBox

Reader Feedback

REFERENCES PLEASE

I read with great interest your article in *CIO* on customer references ["The Truth About Customer References," Aug. 1, 2002, available at www.cio.com/printlinks]. For a (relatively) small independent software vendor, such as ourselves, customer references are an essential part of the customer's purchasing decision. This is especially true when selling to Fortune 100 customers—after all, why should they trust a small company based in Ireland?

We don't offer incentives to our customers so that they agree to be references—everyone gets the same high quality of service. What we've found is that those customers who have purchased our software products are happy to be a reference; one or two offered before we asked. The reason for this is that our (forward-thinking) customers recognize that our success is their success—that is the more people who purchase our software, the bigger our company can grow and develop new products. In the case of the pharma industry, customers want our product to be an industry standard.

Ian Pepper • CTO • Automsoft • Dublin, Ireland • ianp@automsoft.com

I was struck by your cover story's premise that vendor customer reference programs create some sort of "ethical quagmire." Equally disturbing, your article points out that some CIOs aren't doing their homework before committing to major purchases. However, there's another side to this story. Utilized in an intelligent and ethical fashion, customer references perform an essential role in the technology purchasing process.

inevitably arise. The J.D. Edwards sales process emphasizes how our company does business—because in the end, it takes both our software and our partnership with customers to make their business stronger.

Bob Dutkowsky

Chairman, President and CEO

J.D. Edwards

bob_dutkowsky@jdedwards.com

[Editor's note: It is possible that vendor-supplied references will be frank and open, so it is worth talking to them. But in many cases, vendors give significant compensation to their references, and CIOs need to be aware of that in order to weigh the objectivity and relative value of the reference. We advocate asking references what, if anything, they have received for their time and testimony.]

NUMBERS OF MAGNITUDE

In your Aug. 15, 2002 issue, Adam Kolawa ["Building Solid Software," available at www.cio.com/printlinks] writes that the development of auto-

matic error-prevention tools for the software industry is "more complicated and expensive—by several hundred orders of magnitude—than simply pre-programming chip testers."

I'm sure Mr. Kolawa must realize that since one order of magnitude means multiplied by 10, his statement would mean that the cost of developing automated error-prevention tools would easily bankrupt every country on earth.

Let's allow Kolawa's "several hundred orders of magnitude" as mere poetic license, and substitute, let's say, a mere 16 orders of magnitude. One penny multiplied by 10 to the 16th power results in a cost of \$100 trillion to develop error-prevention tools!

Innumeracy in any form is certainly one possible reason for creating or failing to correct software errors, and as far as innumeracy goes, Kolawa's "several hundred orders of magnitude" is one whopper of an error.

It was an easy mistake to make, but if we can't catch an obvious numerical error contained in a narrative format, what makes Kolawa so certain we can write error-prevention software correctly?

Patrick Mills

Director of Business and Technical Services

Associated Electric Cooperative

Springfield, Mo.

SCHRAGE FAN

I couldn't have said it any better than Michael Schrage's article "Beyond Ideas" [Sept. 1, 2002, at www.cio.com/printlinks]. As a partner in a small project delivery firm to the financial services industry, we believe implementation—including postproduction sta-



At J.D. Edwards, we expect software buyers to ask reference customers the tough questions. We encourage our reference customers to speak with total candor about our failures and successes—our prospects should know how we deal with problems when they

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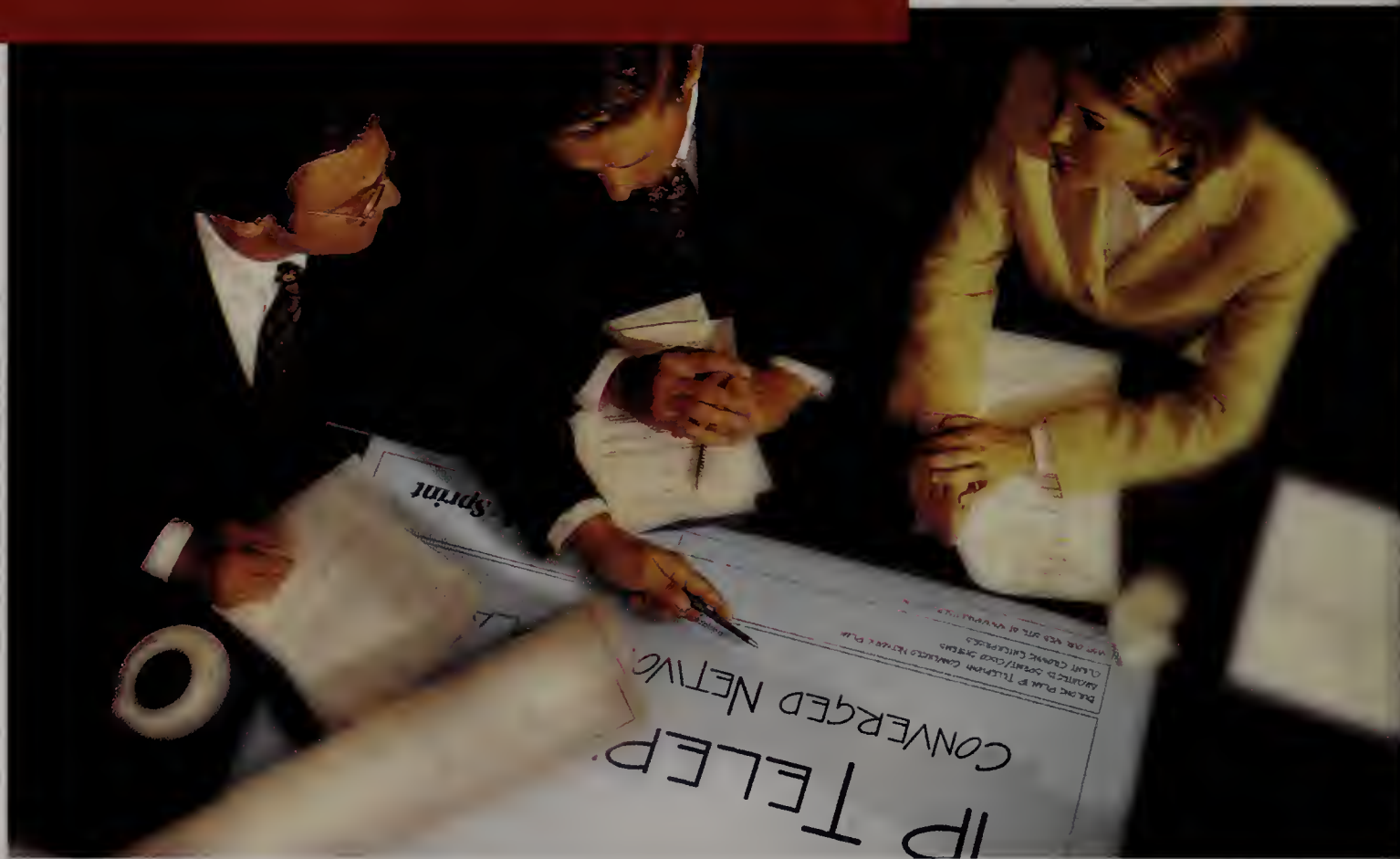
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bilization—to be the critical success phase of any project. In other words, as Schrage says, “It’s about getting things to work on time and on budget.” It’s astonishing how often senior management moves on to the next great idea once a new project is authorized. And how few professionals are reluctant to do the hard and dirty work of execution.

I have been reading Schrage’s articles and books for more than 15 years. His column is an excellent addition to *CIO*.

Claudia Skelton
COO and Managing Partner
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A WORD ON ERP

ERP training has been discussed for some time in this magazine [“ERP Training Stinks,” June 1, 2000, at www.cio.com/printlinks]. Software costs are typically way too high. And then, to make matters worse, vendors have the chutzpah to suggest that service costs that represent two, five or—God forbid—10 times software cost are appropriate. Your vendor needs to acknowledge, as it probably doesn’t already, that its marginal cost of producing an additional copy of software approaches zero. (Really enlightened vendors will work with their customers to drive down the marginal cost of getting an additional sale with incentives like a money-back guarantee.)

Another reason a training budget is irrelevant is inefficient delivery modes. Typically, a company will have to commit to one or more full days of onsite training and often will have to pay for travel time, in addition to travel and living expenses. Or they may have to pay for full days of training (as well as the travel and living expenses of their employees—unproductive time losses) that may or may not address their particular concerns. Whether the classes are taught onsite or at a training center, you may not be able to get these courses when you want them. What makes much more

sense is to pay by the hour for as little as an hour or two of interactive videoconference-based training on precisely the issues and functionality that are of concern to your company. And getting smaller chunks of instructor time with no employee travel also makes it more likely you’ll get what you want when you want it.

Bob Paley
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Markham, Ontario
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PHILOSOPHY 101

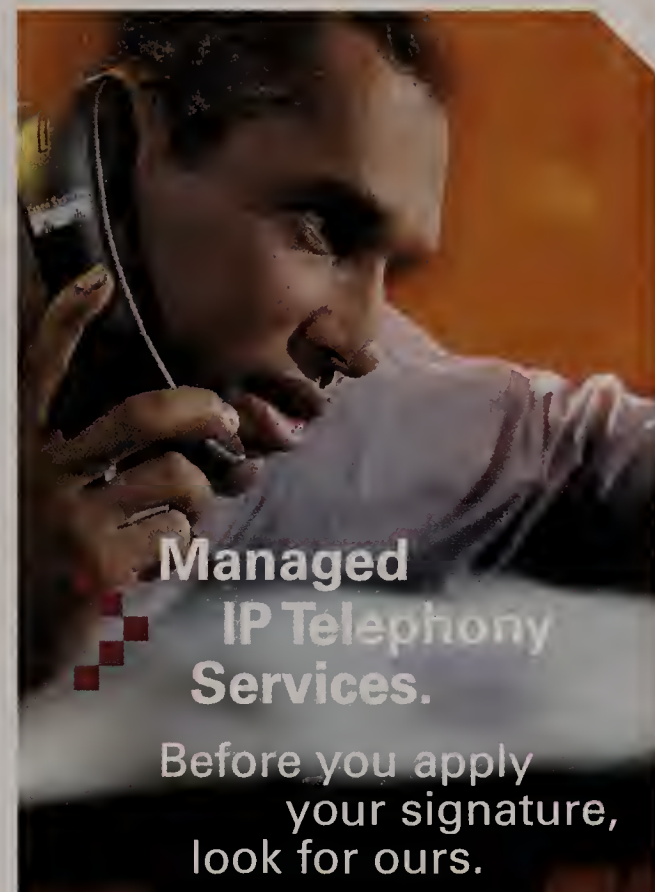
Thank you for “How to Win Friends and Influence Users,” [Sept. 15, 2002, available at www.cio.com/printlinks]. A Soren Kierkegaard quote on the essence of teaching and learning covers all groups of users: “If we wish to succeed in helping someone reach a particular goal, we must first find out where he is now and start from there. If we cannot do this, we merely delude ourselves into believing that we can help others. Before we can help someone, we must know more than he does, but most of all we must understand what he understands. If we cannot do that, our knowing more will not help. If we nonetheless wish to show how much we know, it is only because we are vain and arrogant, and our true goal is to be admired, not to help others.”

In 30 years I have had yet to see this method fail when I bothered to employ it. I can trace all my shortcomings back to my failure to follow this principle.

Stuart Kirk
Vice President of IT
Hitachi Metals America
Purchase, N.Y.
stuart.kirk@hitmet.com

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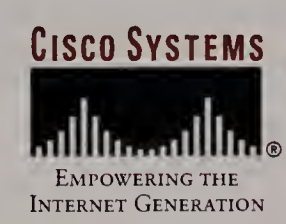
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Ask the Expert by Unisys

Jim Cassell joined Gartner Group 14 years ago after 22 years at IBM. Since then he has developed a reputation as one of the world's foremost large systems analysts.

> *How do you know if your site is a good candidate for server consolidation?*

> The excesses of the 1990s often resulted in hundreds of servers being deployed throughout organizations for specific business units or for specific applications. We have found that these servers can feature very low utilization, frequently in the 5% to 40% range. Specific IT staff are assigned to these servers to keep them running, regardless of their utilization. Not only that, but we have found these servers very often to be over-provisioned because they were outfitted for peak-load performance. They represent highly inefficient islands of automation and are prime candidates for server consolidation.

> *What is the business value-proposition of server consolidation?*

> Well, of course, you can save on the hardware and software that is barely being used. But our data shows that 55% of IT costs typically go to internal personnel, with a further 10% to hardware and 10% to software; the rest goes to other items. Thus, the great potential here is for significant savings on IT staff through consolidation. You don't simply transfer the staff to larger systems because, for one thing, the larger systems are optimized to run more automation software, which is affordable in the consolidated environment. This is software that requires little or no human intervention, thus allowing lower staff costs. We think this is why just about every CIO today is thinking about consolidation.

> *What about security in the consolidated environment?*

> It's just plain easier to manage security in the consolidated environment. If you have 10 servers versus 100 smaller servers, think of how much more manageable it is to do the frequent security software updates that are required today. You'll cut security administration costs potentially, and the CIO will have more confidence in the overall security of the servers, because the staff has fewer machines to focus upon.

> *Any other attributes of consolidation?*

> Partitioning is a big one. If you are consolidating disparate servers—those running databases that are vastly different from one another and don't "play" together well—you can place each database in a separate partition of a big server. If one fails, you don't crash the other. And with partitioning you can manage each of the database workloads through a

single instance of the operating system.

> *In the consolidated world, are there good alternatives to UNIX?*

> The Intel platform with Microsoft Windows 2000 Datacenter has come a long way toward meeting the needs of many of what I call industrial-strength applications. Together they provide a large measure of the functional requirements, like availability and reliability, compared with UNIX. Reliability is key in the consolidated environment because the impact of a server failure is greater than it is in a more distributed environment. And just about every company has plenty of Microsoft technology already in the organization, so the staff skills are there to support this platform.

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IP Telephony. Where to start?

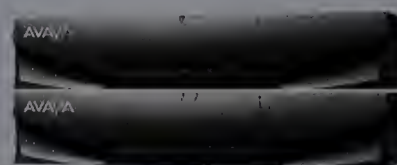
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Edited by Lafe Low and Michael Goldberg

V E N D O R M A N A G E M E N T

The Art of Dealing with IBM Services

IBM PRESIDENT AND CEO Samuel J. Palmisano proclaimed, "the client is the driving force" behind his giant company's \$3.5 billion acquisition of New York City-based PWC Consulting, a deal that was approved by the PWC partners on Oct. 2. But analysts watching the deal say CIOs who are customers of IBM Global Services and PWC Consulting would do well to approach the combined IT services superpower with caution during the next year.

"Establishing close relationships and dealing with an IT services giant is always a challenge," says Lisa Maio Ross, principal at Ross Research, a Cambridge, Mass.-based outsourcing market research company. "The IBM Global Services/PWC

merger is still in its infancy, and frustrations are likely to result."

Mega-mergers in the services industry have been notoriously difficult because of the complex task of integrating people, processes, partnerships, cultures and technology. Fran Karamouzis, a New York City-based analyst at Gartner, says the industry's three big mergers so far—Paris-based Cap Gemini's purchase of Ernst & Young (2000), the Price Waterhouse marriage with Coopers & Lybrand (1998) and EDS's takeover of A.T. Kearney (1995)—are still working to reach their potential. There are still some workers at Price-waterhouseCoopers who refer to themselves as "legacy Price Waterhouse" or "legacy Coopers," Karamouzis says. (Other factors don't help, of course, like in September when EDS cited an IT services spending slowdown for lowering its earnings estimate for 2002.)

Although there should be no significant changes to existing engagements with IBM or PWC Consulting before January 2003, when an integration plan is expected, the smart customer will take a proactive approach, says Karamouzis. Here are some steps CIOs can take now.



Mitigate the effects of changes to your project team. Any disruption to a team slows things down, Karamouzis says. Will partners' roles change? Will anyone assigned to your company be reassigned or laid off? Will someone leave to work on the merger integration? If so, CIOs should ask what recompense they will get for the lost time, money and work, Ross says.

Be diligent about evaluating your new options. PWC Consulting customers that send IT services work to EDS, for example, can expect sales pitches from IBM Global Services. CIOs should embrace these talks with IBM rather than taking a wait-and-see approach, says Mark Hodges, managing partner with TPI, an outsourcing

Continued on Page 32

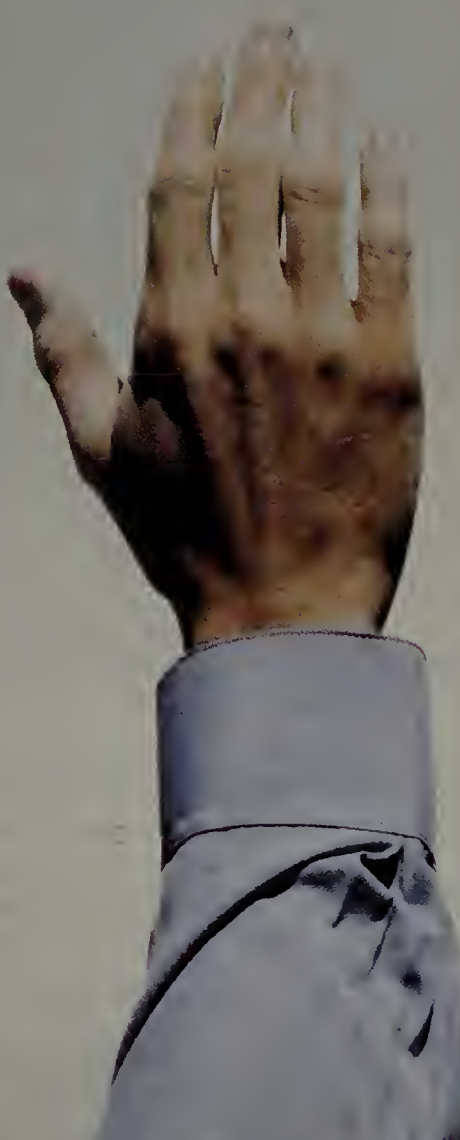
IBM & Company

A list of the top IT service providers in 2001, listed by revenue

1. IBM Global Services	\$39.8 billion
2. EDS	\$21.5 billion
3. Fujitsu (including Amdahl, DMR and ICL)	\$16.8 billion
4. HP/Compaq	\$12.8 billion
5. Accenture	\$11.6 billion
6. CSC	\$11.3 billion
7. Cap Gemini Ernst & Young	\$9.4 billion
8. Hitachi	\$7.4 billion
9. ADP	\$7.0 billion
10. First Data	\$6.9 billion

SOURCE: TECHNOLOGY BUSINESS RESEARCH

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FUTURE TECHNOLOGIES

Perfect for Chewing the Fat

MAXWELL SMART had his shoe phone. Captain Kirk had his communicator. One day soon, we may be able to chat hands-free and hassle-free on a tooth phone. Two British design students have developed a prototype of a phone that would be fitted directly into a back tooth by a dentist. This filling in your molar then would transmit sound through your jaw bone into your inner ear.

The technologies required to make this phone actually work, however, do not yet exist. London Royal College of Art student Jimmy Loizeau and graduate James Auger theorize

that if a wireless receiver and microvibration device were implanted into a tooth, audio signals could be sent to your inner ear through bone resonance. Alas, a still-to-be-developed technology would be required to convert those vibrations to audio signals.

But just think of it: The tooth phone could be discrete. The volume would be just loud enough to be audible, but only you would hear it and respond (though others might wonder why you were talking to yourself). The inventors suggest that the receiver could also be configured to pick up radio signals, making your new MP3 player passé.

This unique prototype is on display until November at the Science Museum in London as part of the "Future Product" awards show.

Talk about giving new meaning to "that sound ringing in my ears."

—Julie Hanson

Someday, you may be able to use the ultimate hands-free phone.



This Date in IT History

2

George Boole, father of Boolean logic, is born in Lincoln, England, in **1815**. Boole strived to translate Aristotelian logic into numbers and algebraic formulas. "We ought to no longer associate logic and metaphysics," professed Boole, "but logic and mathematics."

3

Researchers at Bell Telephone Labs release the **Unix Programmer's Manual** in **1971**, the first written documentation for Unix. It is the first operating system that could host multiple users, and would be widely used at academic and engineering computer centers.

4

Univac, the first commercial computer, projects Dwight D. Eisenhower as the winner over Adlai Stevenson in the **1952** presidential election, with a margin of 438 electoral votes to 93, respectively. While skeptics at CBS refuse to broadcast Univac's initial result, the final electoral college tally was 442 for Eisenhower, 89 for Stevenson.

9

In **1983**, **IBM** and **Hitachi** make a secret pact to settle IBM's 1982 lawsuit concerning Hitachi's corporate espionage activities for \$300 million, said newspaper reports.

12

In **1990**, British computer scientist **Tim Berners-Lee** circulates a proposal diagramming a hypertext system, which he coins the World Wide Web. In August 1991, Berners-Lee makes his Web worldwide by releasing a Web server and line mode browser. After the 1993 release of the Mosaic Web browser by University of Illinois grad students, the WWW becomes widely popular.

17

Dr. Herman Hollerith, the creator of the electric tabulating machine and founder of a company that would later become IBM, dies of a heart attack in **1929**. No word on whether the just-passed stock market crash was a contributing factor.

24

AOL announces it will acquire Netscape in the midst of the Department of Justice's antitrust suit against Microsoft in **1998**. Microsoft argues that the case should be dismissed, contending that the merger is proof that one company cannot control technological development. Microsoft's plea is denied.

—Daniel J. Horgan

SOURCES: CNN.COM; CNET NEWS; GAP (GROUPS, ALGORITHMS AND PROGRAMMING); HISTORYCHANNEL.COM; JONES TELECOMMUNICATIONS & MULTIMEDIA ENCYCLOPEDIA; WORLD WIDE WEB CONSORTIUM

IBM Global Services

Continued from Page 30

consultancy in The Woodlands, Texas. Now can be a good time to renegotiate current contracts with IBM or PWC to add bundled products (hardware and software) and services (IT and business process outsourcing). If you've worked with both companies, you can ask about volume discounts, Hodges says.

Ask about your technology options. Clients that have relied on PWC Consulting's alliances with certain technology

vendors that compete with IBM may see those partnerships weaken or disappear altogether. HP plans to phase out its relationship with PWC, while Sun has said it may continue to work with some parts of the old PWC. Customers should find out if their technology and service provider choices will narrow going forward. For its part, IBM says IBM Global Services and PWC consultants will continue to offer objective advice about technology choices.

Put IBM/PWC to the test. "Ask the newly merged company for a solution that forces the two companies to work together," Hodges suggests. CIOs may find that the service offerings that the combined company brings to the table—PWC's business strategy, business process outsourcing, and expertise in ERP, CRM and supply chain experience along with IBM Global Services' integrated IT services and IT outsourcing expertise—are a boon. Companies looking beyond IT, to HR or finance, may see big advantages here. "CIOs need to dig deep and learn more about the business implications of the merger," says Hodges, "not just the IT implications."

—Stephanie Overby

PEAK PERFORMANCE —

Reinventing *the* Integrated Customer-Driven ENTERPRISE

THERE IS NO ALTERNATIVE.

Today's organizations realize that becoming a customer-driven enterprise, making it easier for customers to do business with the organization, is non-negotiable; it's a must to achieve sustainable competitive advantage. The goal—to consistently deliver an exceptional customer experience—requires that companies apply best practices in every aspect of managing customer relationships.

Embedding best practices for customers into industry-specific business

processes is essential to success, and yet just to identify and document these best practices is one challenge. Integrating them—delivering these best practice-based business processes across the enterprise—is another.

CIOs clearly recognize the enormous economic potential of creating a company where customer information flows freely throughout the entire enterprise, and where streamlined business processes are optimized to serve customer needs, not fragmented by organizational silos. Ideally, the fully-integrated business delivers a superior customer experience while improving profits and lowering costs.



ILLUSTRATION BY DAVID CUTLER

But CIOs also see the messy reality: Their customer-driven business processes—from lead generation to order fulfillment—depend on the integration of vast amounts of data, much of which reside in legacy and custom applications. This data, sequestered from other disconnected systems such as CRM, ERP and SCM, renders many integration solutions inadequate. Vendors promising a “complete suite” of integrated pre-packaged applications cannot possibly solve this complex issue, as these integration models fail to capture the full range of data across legacy and custom applications that is required to execute customer-driven processes.

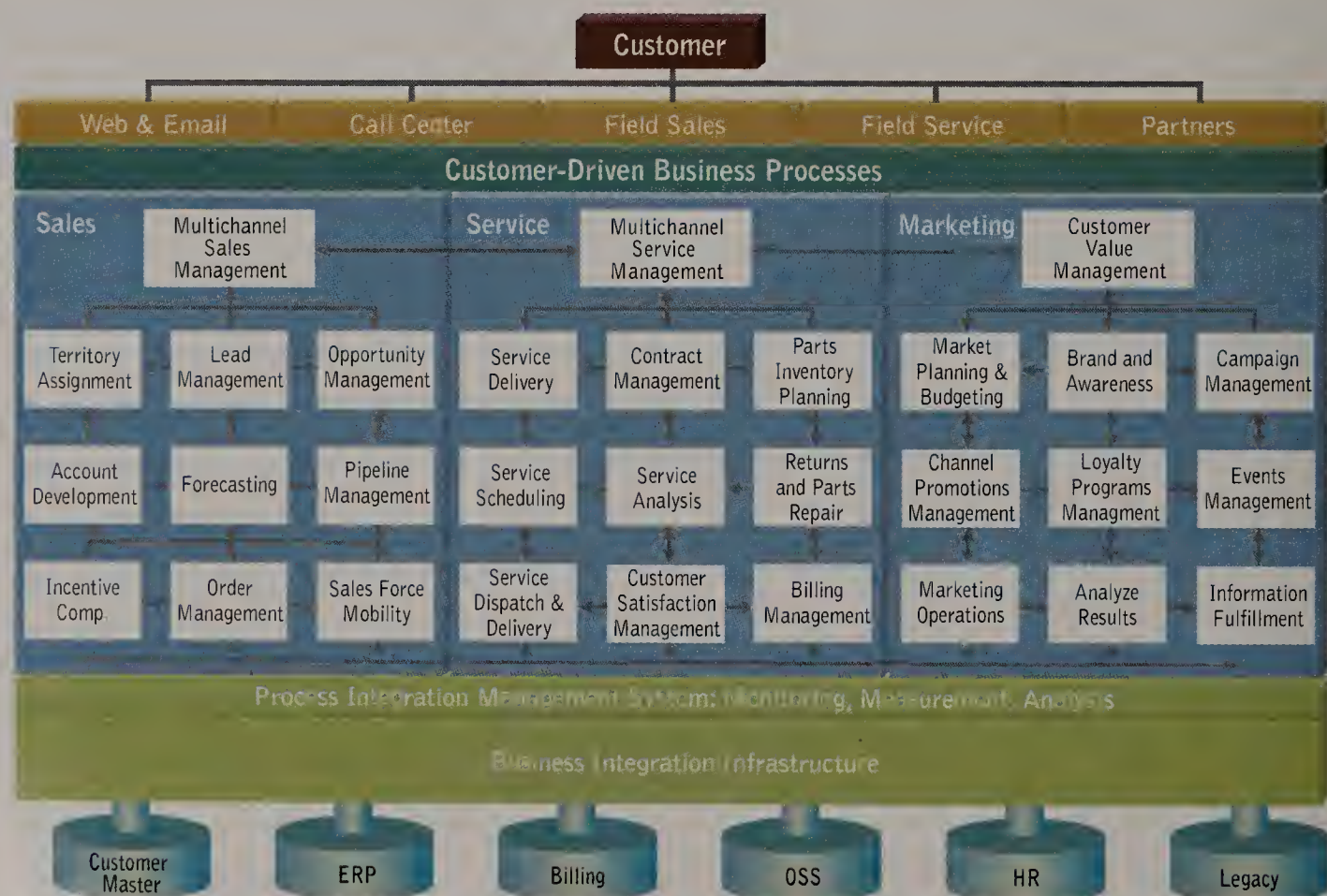
Truly effective integration solutions must take full advantage of emerging open XML and web services standards such as BPEL4WS, XSLT and XSD. These open standards-based integration models are capable of leveraging existing IT investments while enabling the use of best-in-class applications required to achieve optimal, end-to-end busi-

ness processes. About web services alone, Gartner’s Michael Blechar writes in the Aug. 26, 2002, report “*The Impact of Web Services Architecture on AD*” that by 2005 this will be the predominant programming model, used for at least two-thirds, and perhaps as much as 80 percent, of new applications.

“Integration is not merely hooking up your ERP system to a CRM package—that trivializes the problem greatly,” says Mark Sunday, SVP/IT and CIO at Siebel Systems. Only one part of customer-driven process integration is involved with connecting enterprise applications so that information can flow in real time throughout the enterprise. Another challenge is how to choreograph the complex transactions that occur between applications so that they truly reflect the business process being created. It is a Herculean task to orchestrate them all in support of streamlined and effective business processes that keep customers at the center.

In short, while customer-driven business

IBM and Siebel Systems Provide Business Processes for the Multichannel, Customer-Driven eBusiness



process integration might be an IT executive's greatest dream—it can also be the biggest challenge.

"If your organization as a whole is not focusing on customers and how to support them, you're putting yourself at a competitive disadvantage," says Vince Ostrosky, VP/Customer Relationship Management at IBM. "A commitment to customer focus does not stop with selecting the best-in-class CRM system," he adds. "It extends to fundamentally improving all the business activities that directly and indirectly support customer transactions. Failing to realize this will prevent a CRM project from reaching desired results."

With so much at stake, it's no surprise that IT executives are choking back their fears and making a top priority out of integrating systems to build a customer-driven company. "People want integration to be faster, cheaper and easier," says Paraic Sweeney, VP/Marketing at IBM's WebSphere® Business Integration. "They want to be able to manage the risk associated with change by making integration simpler."

ROADBLOCKS TO INTEGRATION

Prioritizing customer-driven integration is a great start. But many experts cite significant barriers to fully integrating business processes.

"The problem is that delivering a higher level of customer experience requires integrating many systems, which is cost prohibitive, and projects are often shelved," says Edward Abbo, SVP/CTO at Siebel Systems. Integration alone is not the answer. Integrating processes to be customer-centric involves transforming how companies do business in ways that deliver the most value and competitive advantage.

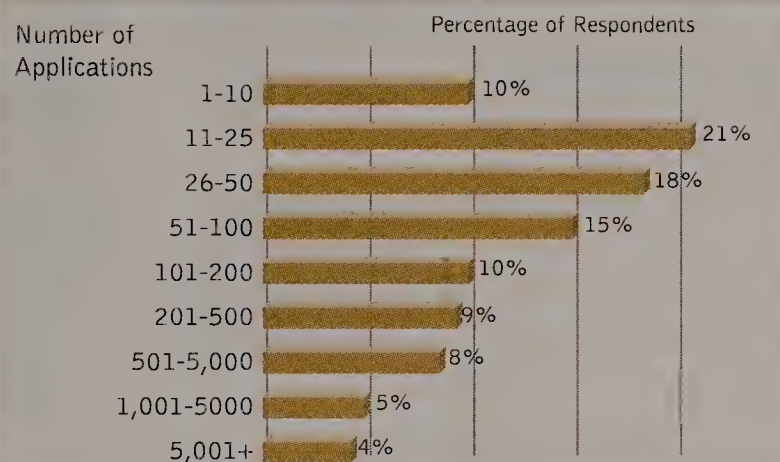
Corporations also must ensure that the right business processes get integrated. "Process integration requires an end-to-end analysis of current business processes and data flows," says Steve Bonadio of Meta Group. "CRM integration differs in some respects insofar as ultimately the customer has to be the primary focal point for what is being integrated—not the organization."

"The payoff is worth the effort, but integrating a company's business processes need not be so complex," says Ambuj Goyal, general manager of IBM's Solutions Division. "While it requires CIOs to tackle difficult questions of budget, project scope and technical complexity, integration can be made easier with a pre-built software solution in which integration best practices are embedded in every component."

Most experts say that the average large

Assessing the Integration Challenge

How Many Applications Do You Have in Your IT Environment?



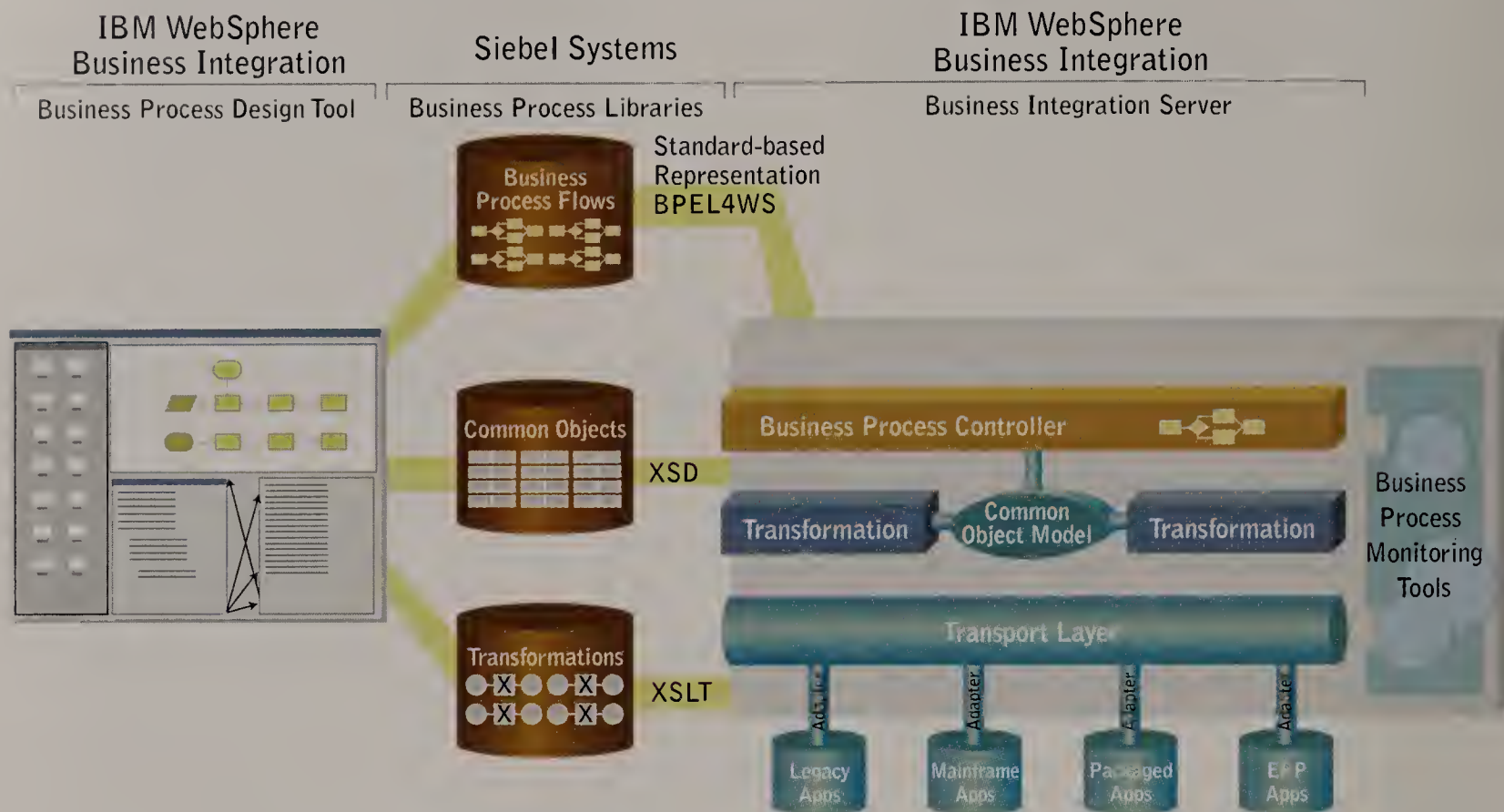
Source: Satrnetrix Survey

corporation has anywhere from 50 to 100 separate applications—some large global corporations report as many as 5,000 [see chart above]—including a wide range of systems from legacy to order entry, HR and sales systems. The sheer number of applications makes integration complicated.

"It's not just linking numerous applications that is complex, but also selecting which to include, which systems to retire, and which to replace altogether with a packaged application," says IBM's Ostrosky. "CIOs must then figure out how to make them all work together to support business activity. By maintaining focus on the process and how it affects customers, the answers become clearer."

All that technical complexity also adds up to a fairly large line item in the IT budget. According to *"The State of Integration in Today's Business World,"* a recent report from

Who Provides What in the IBM and Siebel Systems Joint Solution in Support of Universal Application Network



The Hurwitz Group, budgets devoted to integration spending can be nearly 30 percent of an overall IT budget. Gartner analysts G.Long and R. Schulte agree, noting in their June 2002 report, *"Building the Business Case for Application Integration,"* that integration projects typically consume about 35 percent of the cost and effort in an application implementation. Says Janelle Hill of Meta Group, "Most enterprisewide integration initiatives are multimillion dollar projects, depending on the size of the company and the scope of the project."

But just because integration projects can be cumbersome and costly doesn't mean they have to be.

OVERCOMING THE BARRIERS TO CUSTOMER-DRIVEN PROCESS INTEGRATION

Every company, every industry, is unique in how it relates to its customers, so it stands to reason that a customer-driven integration project will vary according to a company's

individual processes and goals. Such unique requirements argue for the use of some custom integration work. However, at the same time, CIOs face constant pressure to deliver these initiatives on time and under budget, so an expensive and time-consuming custom project is out of the question.

But now there is a new alternative: the IBM/Siebel joint integration solution, which marries Siebel Systems' pre-built library of customer-driven business processes to IBM's WebSphere Business Integration software, using an open standards approach.

The joint solution is designed to support Universal Application Network (UAN) Systems, introduced by Siebel Systems in March 2002. It exemplifies the importance of pre-packaged standards-based integration in implementing best practice-based business processes, while leveraging IBM's standards-based approach to business integration software. Together, they allow CIOs to implement a scalable platform that embraces new integration

“An integration infrastructure that supports superior customer experience ... has to be flexible, scalable and deliver measurable results. IBM and Siebel put these requirements first.”

—AMBUJ GOYAL, GM OF SOLUTIONS DIVISION, IBM

initiatives such as web services, while lowering the costs and risks associated with integration.

Together, IBM and Siebel Systems have decades of industry expertise in building customer-driven business processes and in solving integration problems. And now the two companies have significantly extended their Global Strategic Alliance to offer customers an industry-leading solution that embodies this expertise.

[For more information see www.ibm-siebel.com/us/bp]

“Our customers have clearly communicated the need for world-class best practices for sales, marketing, and service,” says Thomas M. Siebel, Chairman and Chief Executive Officer, Siebel Systems. “That’s why we have partnered with IBM to deliver on the promise of pre-built, end-to-end, customer-driven business process-

es that global enterprises are demanding.”

Companies care greatly that their technology investments have solid backing by vendors with a strong track record in delivering results. “And this is especially true in the case of building an integration infrastructure that supports superior customer experience,” says IBM’s Goyal. “It has to be flexible, scalable and deliver measurable results. IBM and Siebel put these requirements first.”

By leveraging IBM’s pre-built business process templates and common object model, Siebel Systems is able to accelerate delivery of its rich library of pre-built, industry-specific business processes. Because their software will work together seamlessly, IBM and Siebel Systems are responding to what customers need: a simple way to integrate business processes from their customer’s point of view.

About the IBM and Siebel Systems Joint Integration Solution in Support of Universal Application Network

THE INTEGRATION SOLUTION brought by IBM and Siebel Systems provides organizations with the ability to choose best-in-class applications that will work seamlessly together to support a customer-driven enterprise [see illustration on the opposite page]. Based on XML and web services standards such as BPEL4WS, XSD and XSLT, the solution lowers development and maintenance costs, and ensures the added benefit that organizations will not be locked into an architecture that becomes technically obsolete over time, preserving investment costs. It is comprised of three components: (1) a library of industry-specific business processes based on best practices provided by Siebel Systems; (2) a selection of business process design

tools, provided by IBM WebSphere, for modeling and configuring these business processes and for creating new ones; and (3) WebSphere Business Integration’s market-leading software, the most reliable, scalable environment in which to execute these business processes. Altogether, these components form the unique IBM/Siebel joint solution in support of UAN, which promises to dramatically reduce the cost and complexity of application integration, and enable organizations to cost-effectively deploy cross-application business processes. The IBM/Siebel joint solution also enables organizations to rapidly respond to business opportunities, optimize organizational performance, and realize unprecedented business value from existing systems.

**Successful integration is more than just an out-of-the-box solution.
It requires a measured, time-tested approach that incorporates today's
business needs and tomorrow's possibilities.**

"Siebel Systems has a good handle on customer-related elements. It knows what the big things are that everybody tries to integrate," says Meta's Hill. "The buyer wants a much lower-cost solution and a much more packaged solution."

GETTING INTEGRATION RIGHT

But successful integration requires more than a solution; it demands a measured,

time-tested approach incorporating today's business needs and tomorrow's possibilities. It also requires that companies closely examine their business processes for opportunities to streamline processes, and reinvent them to reflect best practices in customer-driven integration. From their extensive integration experience, IBM and Siebel Systems suggest the following best practices for integration, which are inherent in their new joint solution:

Four Tips to Achieve Customer-Driven Integration

Putting the customer at the center of an integration project requires a shift in thinking, says Steve Bonadio of Meta Group. He divides customer-driven integration into the following four areas:

Front to back office integration. This is the traditional start of many integration projects, linking front end applications such as sales automation tools and call center software to back end programs like entitlement or billing systems.

Operational to analytical integration. By integrating operational data such as customer support information, companies can use analytical software to build smarter customer policies. Using analytical tools to parse the customer data helps executives improve profitability, or get a handle on such vexing issues as customer churn, for example.

Cross channel integration. By integrating the systems of different sales channels, such as e-mail and voice mail, executives take a major step in building a comprehensive customer profile.

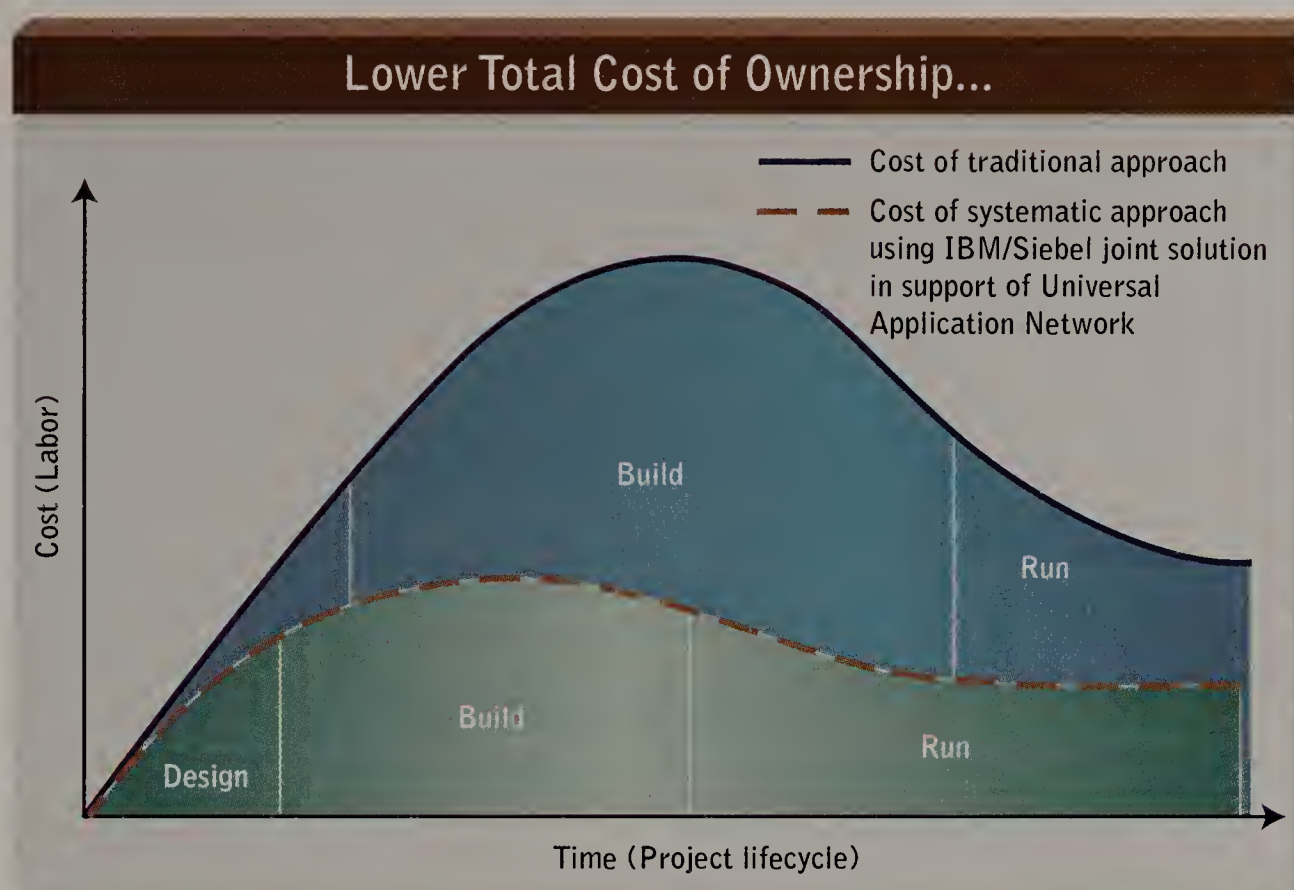
Downstream integration. Companies really need to look at tying the web and e-business elements of their processes to traditional CRM channels for true customer-driven integration.

Drive Your Integration Project Based on Customer Needs

Siebel Systems' entire business is based on delivering the highest levels of customer satisfaction and building more profitable customer relationships.

"What we've done is draw on our experience to identify best practices by industry and embedded those practices in the Siebel Systems suite of business process software," says Siebel Systems' Abbo. Siebel Systems has customized its business process software by making processes specific to industries, but also provides tools that let companies easily tailor the software to match their unique requirements. "We expect that customers will mold these business processes to their specific requirements," says Abbo. "It's important to be able to build the processes from end to end to reflect customer expectations for each company." Siebel Systems' best-of-breed approach also means that companies won't have to wrestle with the 'my way or the highway' demands of some monolithic packaged software products. The customer drives the software integration, not vice-versa.

IBM WebSphere Business Integration software, a leader in its market space, comes with a set of pre-built software components that also preclude the need for a lot of custom coding. Not only are these components ready to use practically "out-of-the-box," they come



already equipped with functionality that ensures the security, reliability and scalability of the solution—which often have to be coded separately. A tool set is also provided to help customers take the pre-built components to the next level, to meet their unique needs.

Maximize Integration Return on Investment and Total Cost of Ownership

It's been said before, but it's worth repeating: Time is money, and the faster a project gets finished properly, the faster the company will reap a return on investment, whether through cost savings or revenue generation.

One of the best methods of speeding projects to completion is by using a systematic approach to integration, like the one IBM and Siebel Systems offer, as compared to traditional approaches where companies build it themselves, or use development tools that require mammoth effort. In fact, in the June 2002 report, *"Building the Business Case for Application Integration,"* Gartner analysts Long and Schulte estimate that companies that opt for a systematic integration approach can integrate applications approximately 20 percent faster.

The Total Cost of Ownership of

WebSphere Business Integration software is markedly lower than that of homegrown integration solutions or those of application suite vendors. "The project implementation time is fast because companies can use the ready-made templates instead of custom-coding each element of the infrastructure," says IBM's Sweeney. "And follow-on projects are even faster because you can re-use WebSphere Business Integration components from one project in another."

The low cost of ownership is also due to the solution architecture that is designed to sustain the vagaries of dynamic business environments. "When you implement these business processes on WebSphere Business Integration, they are less susceptible to the changes that inevitably occur at the application end," Sweeney says.

The result: faster time to Return On Investment and lower Total Cost of Ownership.

Build a System for the Future

Integration is difficult enough to do once—how do you ensure that your integration solution will grow with the business as customer needs and market conditions evolve

How to get ROI on Integration

Getting the maximum bang for your buck on enterprisewide integration requires a canny mix of technical savvy and business know-how. Tips include:

- **Use proven integration technology** as the basis for the implementation project to ensure an integration solution that will support your business as it changes and grows.
- **Build a centralized strategy** with executive level support, and run it from an integration competency center. This helps keep costs under control and avoid redundant projects.
- **Streamline development.** By using pre-built business process flows—pre-built solutions that define and orchestrate a sequence of steps necessary to achieve a business objective, such as customer creation, credit check, or quote-to-order—companies can cut project development time significantly.
- **Reuse components.** Experts advise the use of common object models, which are representations of data exchanged among applications, such as customer, order or product. Using common objects reduces the number of data transformations between applications from Order N2 to N, saving coding time and speeding project development.
- **Use point-to-point integration only where appropriate.** Costly to code, point-to-point integration is brittle and prone to breakdowns. And since it's not centralized or built in a standard manner, it's even more expensive to maintain.

over time? "The vast majority of companies have a large and complicated application infrastructure," says Siebel Systems' Sunday. "Your approach to integration has to be able to deal with that complexity."

The smart CIO will build an integration platform that is flexible and agile enough to grow with the business, and be able to accept

next-generation integration technologies such as web services. That means using a standards-based solution. "If you can base every aspect of your integration plan on widely accepted standards, it'll be a key enabler to facilitate cost effective, scalable integration," says Sunday.

Being entirely standards-compliant, the IBM/Siebel joint integration solution assures CIOs that their solution will meet the future technology requirements of their IT environment. "CIOs want a flexible solution so that integration doesn't become a stumbling block," says IBM's Sweeney. "They don't want to be forced to use a proprietary solution. By using a standards-based approach, customers can use our solution no matter what platform they standardize on."

THE BOTTOM LINE ON INTEGRATION

What it all boils down to is this: CIOs must choose projects that will deliver significant business value, either through cost reductions or profit boosting. That's why they are intrigued by the possibilities inherent in creating an enterprise that has fine-tuned its business processes to maximize value to its customers. With that mandate, many IT leaders are turning to technology companies that can help build a customer-driven business, not just implement technology.

"At the end of the day, I think we're on the cusp of a new movement where organizations are really going beyond system-to-system integration," says Meta's Bonadio. "They're really taking the discipline several layers up to focus on the business processes."

Because in the end, customer-driven business process integration is about becoming a customer-driven enterprise. The technology is just there to help. •

To find out more about Siebel Systems' best-practice business processes and IBM WebSphere Business Integration in support of UAN, point your browser to: www.IBM-Siebel.com/us/bp

This report was written by Carol Hildebrand, a business and technology writer based in Wellesley, Mass.

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The Magazine for
Information Executives

By the Numbers

By Lorraine Cosgrove Ware

First Line of Defense: Your Staff

COMPANIES NEED TO THINK about securing the business—not just the network—to protect information assets. Steve Hunt, vice president of research at Giga Information Group, suggests that IT departments should proactively beef-up their security staff. While one headcount or number does not fit all, Giga outlines seven areas that companies need to address to form their security strategy.

Security Staffing

It is important to devote an adequate number of employees to security within your organization, particularly in technical support.

Best Practices

Employ hardware and software standards. This will ensure lower staffing requirements and achieve greater efficiency. Reducing the number of disparate operating systems and applications will lessen staffing requirements and streamline processes.

Assess security functions quarterly. Define a set of metrics to measure progress and get a baseline assessment—then use these metrics to consistently evaluate progress.

Select measurements that reflect a number of perspectives. Consider the customer view (awareness and communication), an operational view (technical support, policies), an innovation view (skills, education), learning view and a financial view (funding, audit).



CIO SURVEY EXCLUSIVE

Percent of IT staffing resources allocated to security

Companies with a CSO:	Companies without a CSO:
15%	6%

For more on security spending see www.cio.com/research.

NOTE: STAFFING LEVELS WILL VARY BASED ON AUTOMATION, DISPARATE SYSTEMS SUPPORTED, ENVIRONMENT COMPLEXITY AND COMPANY SIZE. MIDSIZE AND SMALL COMPANIES TEND TO SPREAD TECHNICAL SUPPORT FUNCTIONS AMONG FEWER EMPLOYEES WITH BROADER JOB RESPONSIBILITIES.

* DEPENDS ON LEVEL OF OUTSOURCING FOR DAY-TO-DAY MONITORING



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COLLEGE FOOTBALL I.T.

The Geeks Behind No. 1

FOR FIVE YEARS NOW, college football has crowned its champion through its much-debated Bowl Championship Series (BCS) system. The BCS uses opinion polls, strength-of-schedule calculations, seven statistical ranking systems and its own mathematical formulas to determine the best team in the land. (See "Choosing Huskers over Ducks," this page.)

It's more Nasdaq than Knute Rockne, but don't think this is an IT dream come true for a CIO with a football jones. The BCS, administered by the National Football Foundation and the College Football Hall of Fame, has only a \$200,000 budget. That's popcorn money relative to the tens of millions handed out to the six athletic conferences and the four bowl games that make up the BCS. Add to that the nearly \$1 billion the BSC gets from its 5-year TV contract with ABC and you'd think the BCS folks would hire a big IT

vendor to calculate those critical rankings. Nuh-uh.

"Mine's like 50 lines of code," says Richard Billingsley, describing his BCS ranking application that, in fact, he devised 35 years ago when he was 16. "I keep the ratings on my desktop and just e-mail them to the BCS." For fun, Billingsley, a stress-management counselor in Hugo, Okla., created all-time rankings for all college football teams, applying his formula to the 90,000 or so games played since Rutgers lined up against Princeton in November 1869. (His all-time top team is Notre Dame. Shake down the thunder.)

CIO talked to five of the seven owners of the computer ratings that go into the rankings (Jeff Sagarin and *The New York Times* did not respond). None is paid. Most have advanced degrees. Their programs range from Billingsley's 50 lines of code to Kenneth Massey's nearly 20,000 lines.

"No supercomputers needed," says Massey, a PhD candidate in numerical analysis at Virginia Tech (his Hokies are a bowl contender this year). Massey, like the others, was motivated by love of the game and disgust over the old poll system, which relied solely on opinion.

Wes Colley, an astrophysics professor at the University of Virginia, created his formula "for fun" while he was at Princeton. Peter Wolfe, MD, is "an infectious disease guy" at UCLA. He uses a spreadsheet and a generic probability algorithm for his rankings. "I love the game, and the math's interesting too," he says. Jeff Anderson, a political scientist at the U.S. Air Force Academy (with his partner Chris Hester) says, "The key to developing an accurate computer ranking is applying a sound philosophy to it."

—Scott Berinato

University of Miami quarterback Ken Dorsey's Hurricanes should be a BCS contender again this year.

Choosing Huskers over Ducks

LAST YEAR, before any bowl games were played, coaches and sportswriters ranked the Oregon Ducks No. 2 in the land, ahead of the No. 4 Nebraska Cornhuskers. Both had 10-1 records. Yet the BCS ranked Nebraska 2nd and Oregon 4th. That sent the Huskers to the championship game against No. 1 Miami (where they lost to the Hurricanes 37-14), and relegated Oregon to the Fiesta bowl (they beat Colorado 38-16). Here's how the BCS came to the opposite conclusion from the coaches and sportswriters.

First, the BCS averaged the rankings in the Associated Press media poll and the *USA Today*/ESPN coaches poll. Nebraska was ranked 4th in both, so their average was 4. Oregon's was 2.

Then, the BCS took all the computer rankings, threw out the lowest ranking, and averaged the rest. That produced a 2.17 ranking for the Huskers and 4.83 for the Ducks. (Here, lower is better.)

The reason why Oregon's computer ranking was lower than Nebraska's was due to the strength-of-schedule factor. That is derived by adding up the win/loss records of the Ducks' opponents and also their opponents' opponents (with the win/loss record of opponents counting for two-thirds of the score and the records of the opponents' opponents' counting for one-third). This number is then compared with all other teams to determine a strength-of-schedule ranking. That ranking is then divided by 25 for the final strength-of-schedule value.

Oregon's schedule ranked 31st most difficult, and Nebraska's 14th. When divided by 25, Nebraska's number was .56 and Oregon's 1.24.

Then, the BCS added one point for each loss. Both teams got one point.

Lastly, teams are awarded extra credit for beating rivals ranked in the top 10. One point is awarded for beating the No. 1 team, .9 for the No. 2 team and so on. So Nebraska received .5 quality win points and Oregon got .4.

Finally, the results are calculated by adding the average poll ranking, the computer ranking, the strength-of-schedule value and the loss points, and then subtracting from that sum the quality win points. This produces the BCS rating. As with golf, the low score wins.

Nebraska ended up with 7.23 ($4 + 2.17 + 0.56 + 1 - 0.5 = 7.23$).

Oregon was 8.67 ($2 + 4.83 + 1.24 + 1 - 0.4 = 8.67$).
Eventual national champ Miami was 2.62.

Simple.

—S.B.

SOURCE: THE FOOTBALL FOUNDATION



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MERCURY INTERACTIVE

On the Move

By Meridith Levinson

Think Deep

JANE GROVE FISHKIN is a deep thinker, so it's not surprising that the philosophical aspects of IT, like knowledge management and computer ethics, appeal to her professional passions. She has been thinking, speaking and writing about topics like these for the past 35 years.

Fishkin brings those interests and experiences to bear as the vice president of IT and CIO of the Brookings Institution. Last July, she added the title and responsibilities of vice president to her existing position as CIO. Previously, Fishkin served for eight years as vice president of the Computer Ethics Institute (CEI), an organization affiliated with the Brookings Institution and charged with assessing the ethical issues presented by information technologies. The CEI developed the widely quoted "Ten Commandments of Computer Ethics." Fishkin has also served on the boards of the Falls Church, Va.-based E-Gov Knowledge Management Conference, the Seattle-based Data Warehousing Institute and the online Knowledge Management Forum.

Although she has spent much of her career pondering the implications of IT on ethics and privacy, she is now devoting an equal amount of time and energy to solving tactical knowledge management problems within Washington D.C.-based Brookings, the nation's oldest think tank. "I became interested in KM because that's what Brookings is about and has been doing since Robert Brookings founded it—creating knowledge and basically giving it away to interested parties," Fishkin says.

Where Is It?

Fishkin recently led a successful content management and taxonomy implementation for the Institute's website Brookings.com. Because Brookings publishes such large quantities of its public policy research on the website, scholars were having trouble finding the resources they needed. The new



content management system and its related taxonomy helps researchers find what they're looking for by listing similar subjects with search results. If a scholar is looking at a book on corporate governance, for example, she will also see links to related resources.

Fishkin sums up her mission and that of the IT staff at the Brookings Institution. "The IT department has to bring statistical tools, graphical tools and word-processing tools to scholars to help them process their information," she says. "Our goal is to make it as easy as possible for our scholars to get and process information."

Jane Grove Fishkin's mission is to make the Brookings Institution's research more accessible on its website.

NEWS OF OTHER MOVES

Kevin Turner, former CIO of Wal-Mart, has been promoted to president and CEO of the company's Sam's Club warehouse merchandising division. **Linda Dillman**, who previously served as Wal-Mart's vice president of international systems development, replaces Turner as senior vice president and CIO of the ever-expanding retailer.

In other Wal-Mart news, a former executive for the Bentonville, Ark.-based retailer has joined the board of directors of San Francisco-based retailer Gap. **Bob Martin**, 53, was an executive with Wal-Mart for 15 years and served as president and CEO of Wal-Mart's International Division from 1993 to 1999. Prior to leading the International division, he was also Wal-Mart's CIO.

Howard Edels, former senior vice president and CIO of Woonsocket, R.I.-based drug store chain CVS, recently retired. Edels held the top technology spot at CVS since he joined the company in 1992.

After serving for 10 years as the CIO of State Street, John A. Fiore left last July. Shortly thereafter, the Boston-based financial services company announced that **Joseph C. Antonellis**, the company's executive vice president and head of strategy development, would add CIO to his list of titles and responsibilities.

After serving as an IT consultant at Gibraltar Bank for six months, **Terry Price** has been appointed senior vice president and CIO for the Coral Gables, Fla.-based community bank.

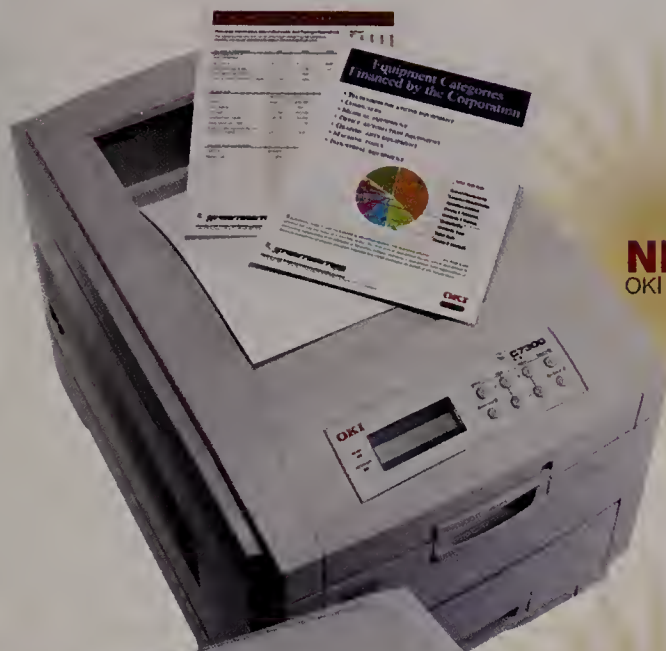
Kurt Keiser's first initiative as CIO of NEC Solutions America is to spearhead the design of the company's IT infrastructure. Since NEC Solutions America recently acquired three other companies, there will be a lot of infrastructure and integration issues to keep Keiser busy.

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F R A U D D E T E C T I O N

To Catch a Thief

FRAUD COSTS RETAILERS DEARLY. For credit card purchases, for example, it is the retailer—not the card issuer—that picks up the tab for fraudulent transactions below the “floor limit” negotiated with the card issuers. In Britain, an application using Europe’s GSM-based text-messaging standard and real-time point-of-sale analysis is catching crooks red-handed.

Venerable London-based retailer Marks & Spencer has reduced fraud by 10 percent, according to Martin Wilkinson, the retailer’s aptly titled profit protection manager. Here’s how it works: Point-of-sale transactions are streamed directly from Marks & Spencer’s 312 British stores into a server at the company’s main computer center—some 10 million purchases every week. There, the transaction is analyzed in real-time by a 5,000-line program written in Microsoft’s Visual Studio.NET, which can process 700 transactions per second.

The objective is to “pattern match” each sale against built-in rules that the company’s profit protection group has devised to spot suspicious trades. Sources close to

the project say there are about 500 of them, which can be changed or added to by the profit protection group without recourse to IT personnel.

In addition to credit card fraud, the rules include the ability to track transactions by an individual account card, a staff member or even an individual cash register—the latter because employees also commit fraud by incorrectly processing refunds, for example. Other rules, the source says, check for multiple refunds on a single transaction, full-price refunds on a sale item and the fraudulent use of gift vouchers.

When a suspicious transaction is encountered, the system sends out an alert. The preferred means of doing that is to send a text message to a security guard’s cell phone, allowing him to apprehend and question the shopper while they are still at

the register. If fraud has taken place, the system also produces on demand a full “evidence pack” for the British courts: the register report, the card numbers used and even a video recording of it taking place.

The system, which took six weeks to develop, has impressed Marks & Spencer top management with a first-year ROI of 415 percent. Even the thieves have taken note. Oftentimes, Wilkinson says, “they now simply go someplace else.”

—Malcolm Wheatley



W E B T E C H N O L O G I E S

Shopping, Unplugged

IN NOVEMBER 1999, a bunch of teenagers ran around Gwinnett County’s Mall of Georgia scanning bar codes on tags of clothes they liked with a handheld device. When they finished shopping and scanning, they plugged the devices into a console that uploaded descriptions of the scanned products to a webpage they could share with friends and family who needed gift ideas.

The teens were part of Fast Frog, one of two pilot programs started by Clixnmortar (the other pilot, Your Sherpa, involved handheld computers and was geared toward adults). Launched as a division of Indianapolis-based real estate developer Simon Property Group, Clixnmortar’s mission was to bring Internet and wireless technologies to retailers to encourage multichannel commerce. (See “Simon Says: Integrate Your Channels” at www.cio.com/printlinks.) Simon was heralded by the media for its aggressive embrace of the Internet—a direct contrast to other companies anxious about channel conflict and cannibalization.

Two years later, on Oct. 19, 2001, Simon quietly recorded a

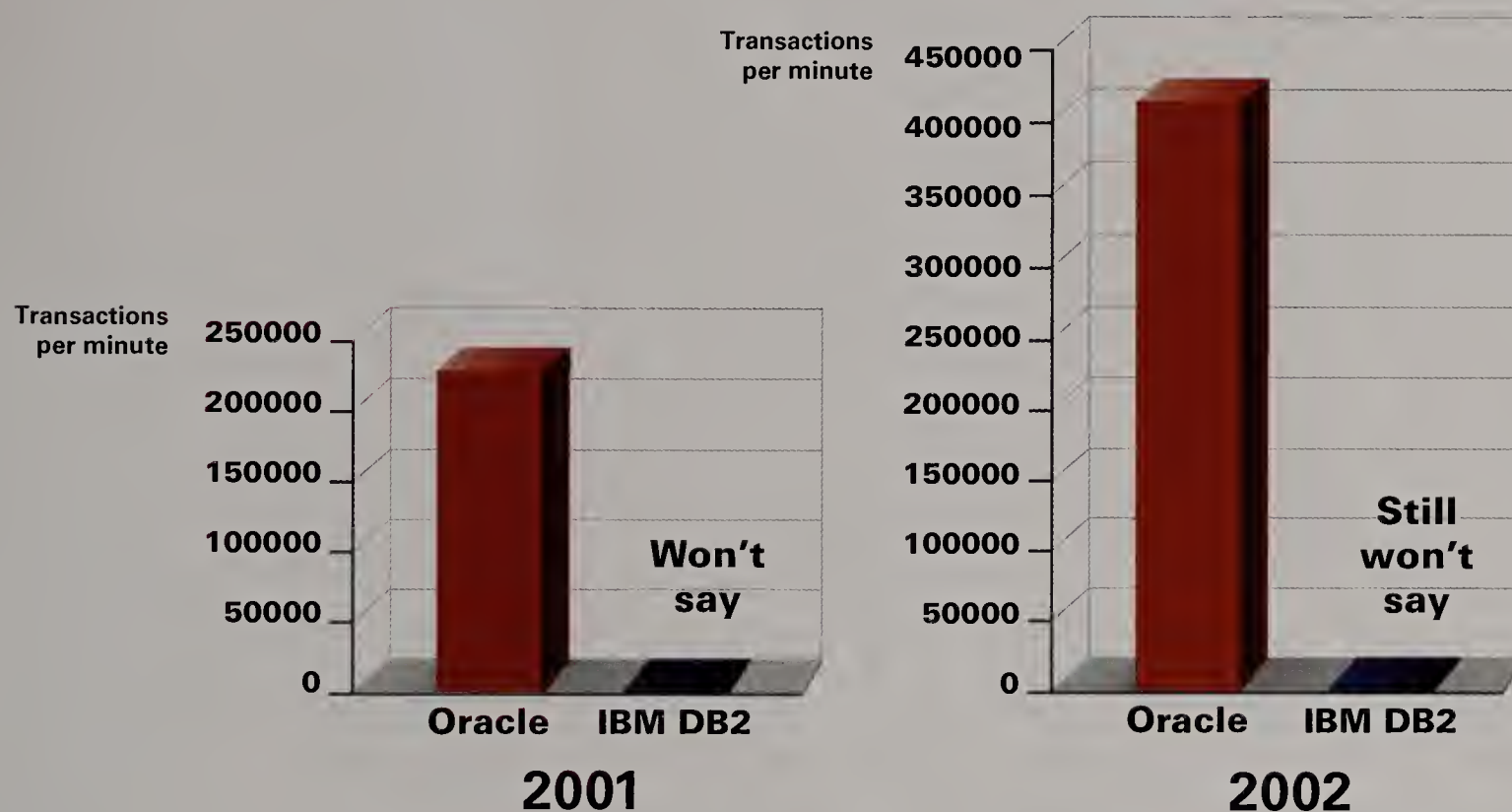
\$16.6 million write-off on its third-quarter earnings statement for Clixnmortar and some of its other technology investments.

Frank Riso, director of product marketing for the retail industry at Symbol Technologies, the company that made the bar code scanner, believes a lack of logistical planning between Clixnmortar and its retail partners was to blame. Retailers didn’t have a process for setting aside items teens had scanned, so parents often found items were out of stock. “If we found a way to figure that out, the program would have been very successful,” he says.

A source close to Clixnmortar (who declined to be identified) says political battles were at the root of Clixnmortar’s demise. When Clixnmortar was just starting out, President and founder Melanie Alshab and Vice President of Technology Robert Covington were given free rein over decision making and Clixnmortar operations. As it began to receive more attention, it took on heightened meaning for Simon Property Group CEO David Simon, who wanted more control over the venture. He often clashed with Clixnmortar executives who wanted to bring in outside investors and make the company a spin-off, rather than treating it as a division of a \$2.1 billion company. The disagreements led Alshab to quit, and according to the source, Simon never found a replacement. The rest is history.

—Meridith Levinson

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How to Solve the Headcount Problem

Staying flexible with job descriptions is one way to get around headcount restrictions. The CIO of Hygeia tells us how.

BY ROD HAMILTON

AT A TIME WHEN BUDGETS ARE TIGHT and technology is constantly changing, it's a daunting challenge to keep an IT team suitably skilled to address today's technology needs. Despite the failures of many Web-based companies, the Internet continues to be the engine that drives the most cost-effective gains in collaboration between companies and internally. But how do you maintain the systems that keep your company functioning while capitalizing on the advantages offered by new technologies? This is a difficult balancing act and requires open-mindedness within IT and the rest of the company. Traditionally, the hierarchy and job roles of the IT department have been well defined. When an employee leaves, the replacement is based on the existing job function and not on the needs of the business.

I believe flexibility should be introduced into this historic practice. At my company, Hygeia—a health-care company that facilitates transactions between the buyers and providers of health-care services—headcount is directed by business need, not history. We now hire replacement staff or fill new positions by first examining our technological needs and the skill sets already present. Then we seek candidates that will fill the gap that cur-



rently exists. The upside to this approach is that the organization is able to respond to new technologies or business objectives. The downside is the difficulty HR has in matching one position against another, which can impede the hiring process.

Recently, our company decided to deploy Web technology as a companywide user interface. Many of these Web applications have components designed for client access via the Internet. This clearly presented a host of security-related challenges that would not exist if the system was exclusively for internal use. The business plan didn't provide for a new security position for some time to come. Coincidentally, the production database administrator decided to leave Hygeia and join another organization. This presented the opportunity to create a job description that required security and database qualifications and experience. Because of our CEO's support, we were able to hire a security specialist who was also capable of managing our databases.

ILLUSTRATION BY FRANKLIN HAMMOND

'To meet ever-increasing demand for our online products and services, Toyota turned to Akamai to instantly extend the scale, performance and reach of its infrastructure at a fraction of the cost associated with traditional build-out.'

—Barbra Cooper
Group Vice President and CIO
Toyota Motor Sales, U.S.A., Inc.



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A Pat on the Back

When deploying new people to work on new technology, it is critical that existing people are managed carefully. Team members knowledgeable of current systems remain crucial to the success of the company, and managers must realize that many of them will want to participate in new projects. In fact, it is quite normal for the stability of existing systems to be taken for granted and valuable efforts expended there overlooked. It is important for the CIO to ensure that this work is suitably acknowledged.

It's also important that existing staff receive new skills training as old technologies evolve or are superceded. After all, everyone is nervous about becoming redundant. When hiring new developers, I first met with the existing staff to understand their concerns. Predictably, none of them wanted to be left behind. They were not interested in managing the new area but were very receptive to having a separate reporting relationship. To ensure that the existing staff would grow in the new environment, we sought applicants who were open to mentoring and had previous experience in that role. To confirm compatibility, team members participated in the interview process. The applicant met the people he would supervise, and the employees were able to comment on their comfort

level with their prospective mentor.

The Web development supervisor we hired, for instance, has effectively trained the staff. In fact, the primary support person for the original system, who was mentored by the new hire, is now one of the key developers deploying the new technology. His responsibilities have grown at a pace he is comfortable with.

This approach allowed us to retain key staff by offering a career development proposition they might otherwise have sought elsewhere. When all is said and done, it wouldn't be possible to transform the technology we use unless the core systems were stable and well supported. Their involvement remains critical to the success of the company.

I believe that such a flexible staffing philosophy is a key tool in any company's success in capitalizing on new efficiencies. It has certainly worked for us. **CIO**

Rod Hamilton is CIO of Miami-based Hygeia, a health-care company that facilitates business transactions. He can be reached at r.hamilton@hygeia.net. Got any ideas you'd like to share with other CIOs? Let Senior Editor Alison Bass know at abass@cio.com.



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It's All About the Execution

Pilot Pathology

If you can't easily scale a pilot technology, don't bother installing it in the first place

A GLOBAL FINANCIAL SERVICES FIRM—you probably have this company's card in your wallet—has an amazing track record with its technology pilots. They almost never fail.

Great IT management? Hardly. That amazing track record comes with a catch: Only a tiny fraction of those pilots are successfully deployed throughout the enterprise. The company is littered with expensive “mini-me” implementations: software, hardware, networks and apps that work perfectly well in their designated guinea-pig departments but virtually nowhere else.

Most of these pilots—including a not quite expert system for fraud detection and a data mart for CRM—did not live beyond a year or two. And those that did have become subject to perennial budget battles over who should pay to maintain them. Ugly.

This pathology of IT pilots is as global as IT innovation itself. The corporate landscapes of Fortune 1000 firms are cluttered with the digital bones of IT pilots that couldn't, wouldn't or shouldn't scale. Indeed, too many pilots are designed with scaling as the last thing in mind. Companies focus on making their pilots more workable than scalable. In other words, they optimize the pilots' success at the expense of optimizing the knowledge necessary to cost-effectively scale. The pilots become an end, not a means.

This economic dysfunction exists for completely logical reasons. The most important is that nobody likes failure. When a company spends real dollars and man-hours on a database or CRM pilot, it doesn't want to declare that investment a waste. So companies try to make sure the pilot “works.” IT and the designated department will do whatever it takes to ensure the benefits of the pilot exceed its cost.

Which naturally leads to the next reason: To guarantee that the pilot succeeds, IT and its designated department conspire to have it solve some unique set of business problems. These problems tend to be so localized and specialized that they require more customization than standardization. Guess what's more expensive to scale?

At the aforementioned global financial services firm, departments

worldwide have superb point solutions to their particular problems. But in reality, the company's approach has generated diseconomies of scale that wasted hundreds of millions of dollars in less than a decade.

Pilots that run without scalability as a priority aren't IT projects; they're research. There's nothing wrong with doing research on innovative IT offerings. However, let's make sure the vendors—not the shareholders and employees—are paying their fair share for it.

The most important question confronting CIOs considering innovative technologies is not, How well do they work? but rather, How well do they scale? Instead of asking, How do we make the pilot work better? IT must probe, How might that suggestion to improve the pilot affect how we scale?

In many cases, a technology may scale quite well but the organizational use of it may not. I'm constantly surprised by IT departments that have debugged the technical scalability concerns at the departmental level but utterly fail to appreciate—let alone document—how long it took people in the department to accommodate the technical changes. For example, cryptokey technology may scale well technically, but the effectiveness of the implementations vary widely. Some companies put IT in charge, others HR, and still others hold individual departments accountable. The latter is a sure recipe for failure.

The huge advantage of Net-centric architectures is that they can redefine the economics of IT experimentation. Running a pilot for, say, a sales-force automation package can be expensive and time-consuming. Using the intranet to emulate the key functionality of such a package in a controlled way is not. I would never implement an SFA deployment without testing it on an intranet to see how salespeople actually use it.

The opportunity to rehearse tech rollouts by first putting them on an intranet or extranet should be as appealing as it is cost-effective. It minimizes the chance that either IT or the company will get caught up trying too hard to make an app work at too local a level. And these nets are a cheaper place to make mistakes.

Today's economics no longer permit the luxury of piloting. The ability for IT to experiment faster, better and cheaper to understand the real costs of implementation represents a strategic choice, not just a tactical opportunity. The organizational message is simple: no scale; no sale. If we can't cost-effectively scale it, we shouldn't do it. That's an implementation philosophy worth implementing. **CIO**

Michael Schrage is codirector of the MIT Media Laboratory's eMarkets Initiative and author of *Serious Play*. He can be reached at schrage@media.mit.edu.



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CXO Perspectives

A CRM Success Story

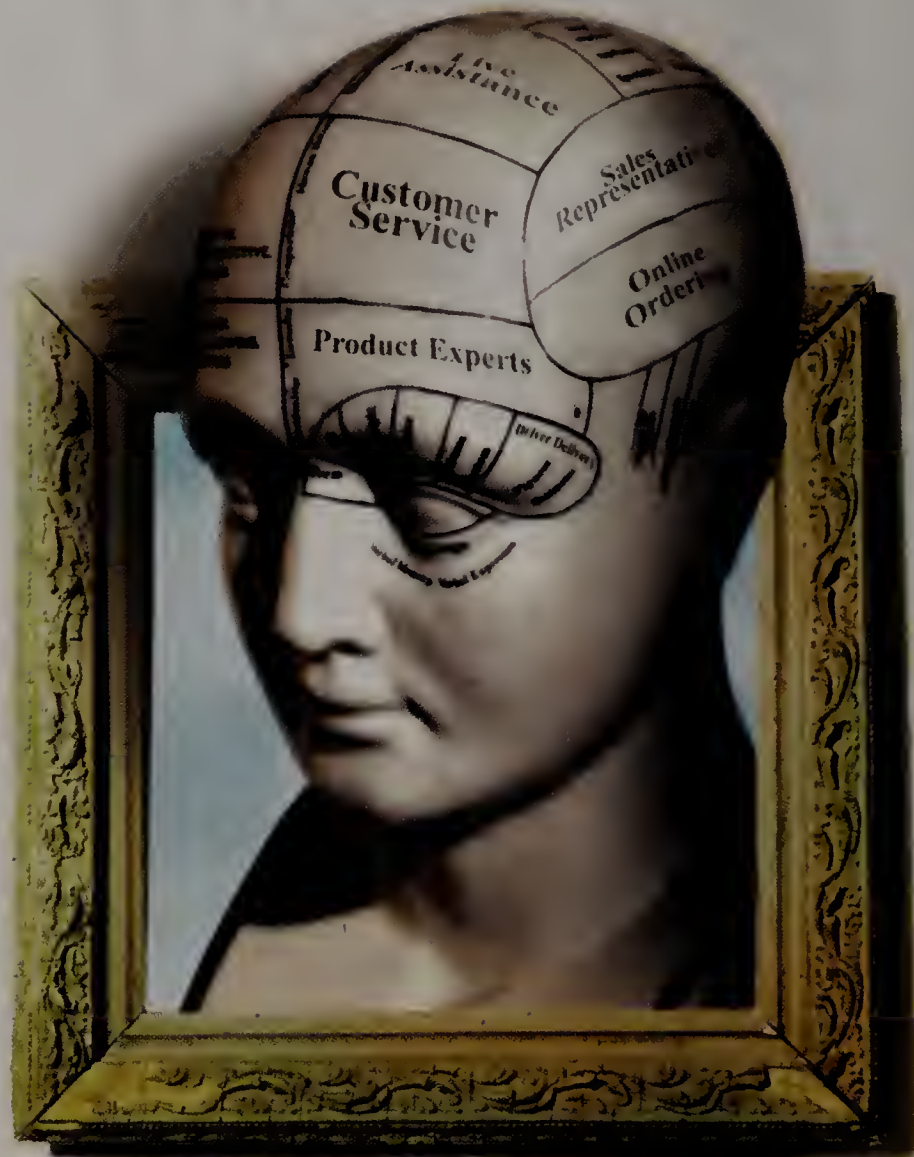
The CEO of Boise Office Solutions suggests that giving customers greater economic value might just lead to a better ending

BY CHRISTOPHER MILLIKEN

YOU'VE READ ALL the customer relationship management horror stories. You've heard the grim statistics from Gartner, which estimates that more than two-thirds of all CRM initiatives fail. So you might wonder why our company, Boise Office Solutions, recently spent \$25 million implementing a CRM system—and be surprised to learn that we are seeing increased customer retention as a result.

Our initiative has been an overwhelming success for one reason: We didn't simply set out to strengthen our internal processes with CRM. Instead, we started with a clear business objective: to provide our customers with a greater economic value. Only then did we invest in technology to help us meet that goal. Much of the technology turned out to be CRM tools.

The steps we took with our CRM initiative are the same ones we try to follow with all technology projects. Boise Office Solutions has refined this process over the years with several technology projects, including establishing a true B2B e-commerce platform integrated into our supply chain management and implementing a proof-of-delivery system. I'd like to share our process with you and explain why it works.



Know Your Customers, All of Them

I'm surprised at how often companies don't consider their customers' needs when making decisions about technology. When we launch a new technology initiative, our first step is to ensure that everyone within our organization, especially the IT department, has a comprehensive understanding of our business strategies and customers' needs. We accomplish that by pulling together a cross-functional team of business and IT managers.

The first step is to properly define the customer. We sell office products to businesses, and in a B2B industry such as ours, there is a tendency to consider the purchasing manager of the company with whom you have a contract as the customer. But within every customer organization there are a number of people, in many cases thousands, who order from us every day.

When you add up all contacts with these individual buyers, some of our customers interact with us 400,000 times per year.

ILLUSTRATION BY STEPHEN WEBSTER



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All of our customers have specific needs. For example, we found that customers sometimes need specialized help when ordering products such as technology accessories and furniture, so we have product experts and call queues dedicated to taking those calls. Before we invest in technologies to serve different kinds of customers, it's imperative that we have a clear understanding of their individual needs.

Turn the Focus Outside-In

Many companies make the mistake of organizing their business in terms of how they bring their products or services to their customers. The problem with that approach is that you lose sight of the customer's perspective. You can have the most leading-edge technology available, but if it's easier for customers

Once the IT group understands how customers interact with your company, it can play a pivotal role in developing and executing business strategies.

to do business with one of your competitors, chances are they won't stay with you for long.

Before planning our CRM initiative, leaders from our business strategy and IT teams mapped out every kind of contact our customers can have with our organization. Although this exercise may sound simplistic, in practice it is a very complex undertaking. The customer touchpoint map details how all of our individual customers within a company, from purchasing professionals to administrative assistants, interact with Boise. For example, customers might contact a sales representative, call a customer service center, accept a delivery from one of our drivers, or order products online or via fax. In essence, we created an outside-in view of our processes.

It was important that IT staff participate in this touchpoint-mapping exercise because it gave them valuable insights into how our customers use our technology, both directly and indirectly. That helped our IT team focus on the specific technologies that would improve service to our customers and weed out those that weren't right for our goals. For example, instead of buying a complete end-to-end CRM suite, we chose individual software applications for customer interaction and

campaign management that met specific customer needs and integrated them with our existing order-processing technologies.

peer resources

Read the whole story of CRM and Boise Office Solutions in **THIS CHANGES EVERYTHING**. Look for the link at www.cio.com/printlinks.

Develop IT Strategies for Specific Customer Needs

Once the IT department has a comprehensive understanding of how customers interact with your company, it can play a pivotal role in developing and executing business strategies. At Boise, we create cross-functional teams that pair IT leaders with our business development managers. The teams outline specific customer needs, then determine the technology strategies that will bring the best possible solutions to the customer.

Make Implementation Easy on Your Customers, Not Your Company

Don't lose sight of your customers when implementing technology strategies. Boise's CRM initiative would not be a success if we had inconvenienced our customers. Because we applied new

technology to our two largest customer channels, phone and Web, it was paramount that both remain fully functional.

To minimize the effect of the transition on our customers, the IT and business development teams outlined all of the steps in our CRM initiative and how each step could potentially affect customers.

For example, one step involved cleansing and loading 2.2 million customer and contact records from multiple disparate databases into a single customer profile database. To prevent disruption to customers, this exercise was performed during nonbusiness hours.

Create a Customer-Focused Culture

The last thought I'll leave you with is that adapting a customer-focused approach to technology in most companies requires a cultural change. IT is often viewed as a department that supports all of the other functions of a company. Unless the entire company is committed to viewing its systems from the customers' perspective, IT will continuously be asked to support projects that meet the short-sighted goals of internal departments. As CEO, a key part of my responsibility is to make sure that the entire company understands the value of our new CRM systems and business model. I stayed very close to the work, and I personally presented our new capabilities to many of our customers.

The onus is on management to lead by example and push for a customer focus on every project. If a proposed plan isn't right for your customers, don't do it. Send your teams back to the drawing board to come up with a solution that will work. Your customers will reward you in the long run. **CIO**

Christopher Milliken is president and CEO of Boise Office Solutions in Itasca, Ill. What topic would you like to see discussed from the CEO's perspective? Tell us at cxoperspectives@cio.com.



A man in a white shirt and yellow tie stands in a library, holding a book high in his right hand and gesturing with his left. The shelves are filled with books.

HOW DOES PETER HARRINGTON BOOKS PLAY TO WIN?



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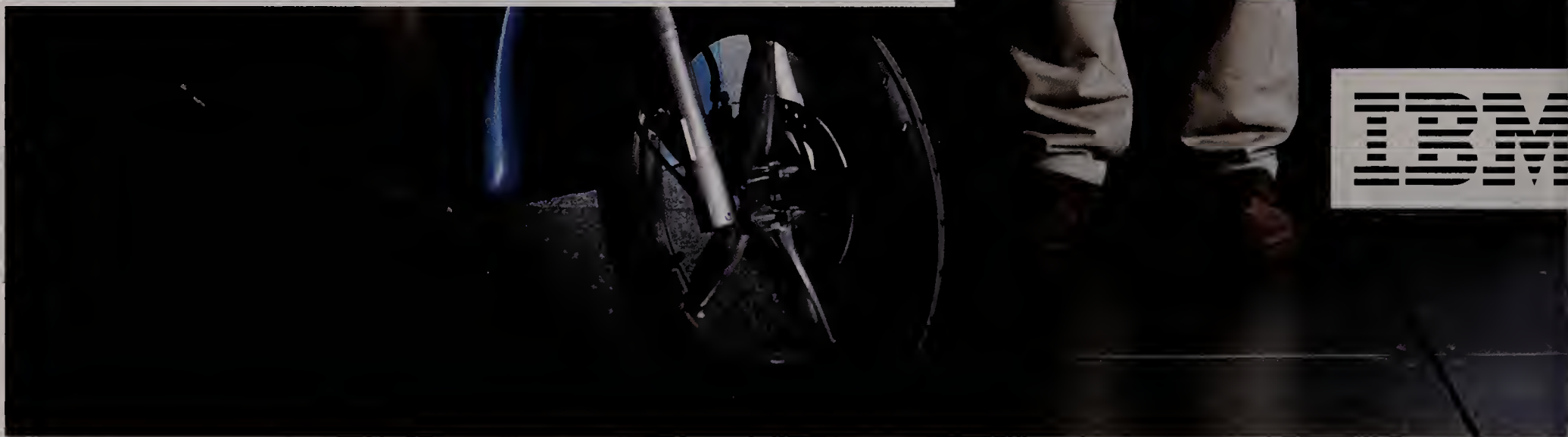
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CAN

CIO Monte Ford landed at American Airlines in late 2000 charged with rebuilding IT. Now he's got a bigger job: Help restore the world's biggest airline to profitability.

AMERICAN

KEEP FLYING?

BY TODD DATZ

During the past couple of years, the biggest U.S. airlines wrestled with the devastation wrought by the recession and 9/11. But by August, they were screaming uncle. In one three-day stretch, U.S. Airways declared bankruptcy, United Air Lines' stock price hit an all-time low on fears it would follow suit, and American Airlines launched a cost-cutting campaign designed to alter the guts of its core business model.

Reader ROI

- ▶ Why the new CIO was charged to rebuild American's IT department
- ▶ How American Airlines is using IT to respond to tough times
- ▶ What 9/11 and the recession meant to AA's IT spending and projects

On Aug. 13, American, the world's largest airline, announced that its Dallas/Fort Worth hub would begin spreading out flights more evenly throughout the day (a process called depeaking) in November; retire its 74-jet Fokker 100 fleet; reconfigure and consolidate a number of aircraft fleet types; reduce capacity 9 percent by November; and cut 7,000 jobs by March 2003.

Combined with other initiatives already implemented, AA expects to save \$1.1 billion in annual operating costs—and that's before taking account of the capacity reductions. But that's not nearly enough: In a September speech, Chairman and CEO Don Carty said that during the next several years the \$19.6 billion company needed to reduce structural costs by at least \$3 billion annually.

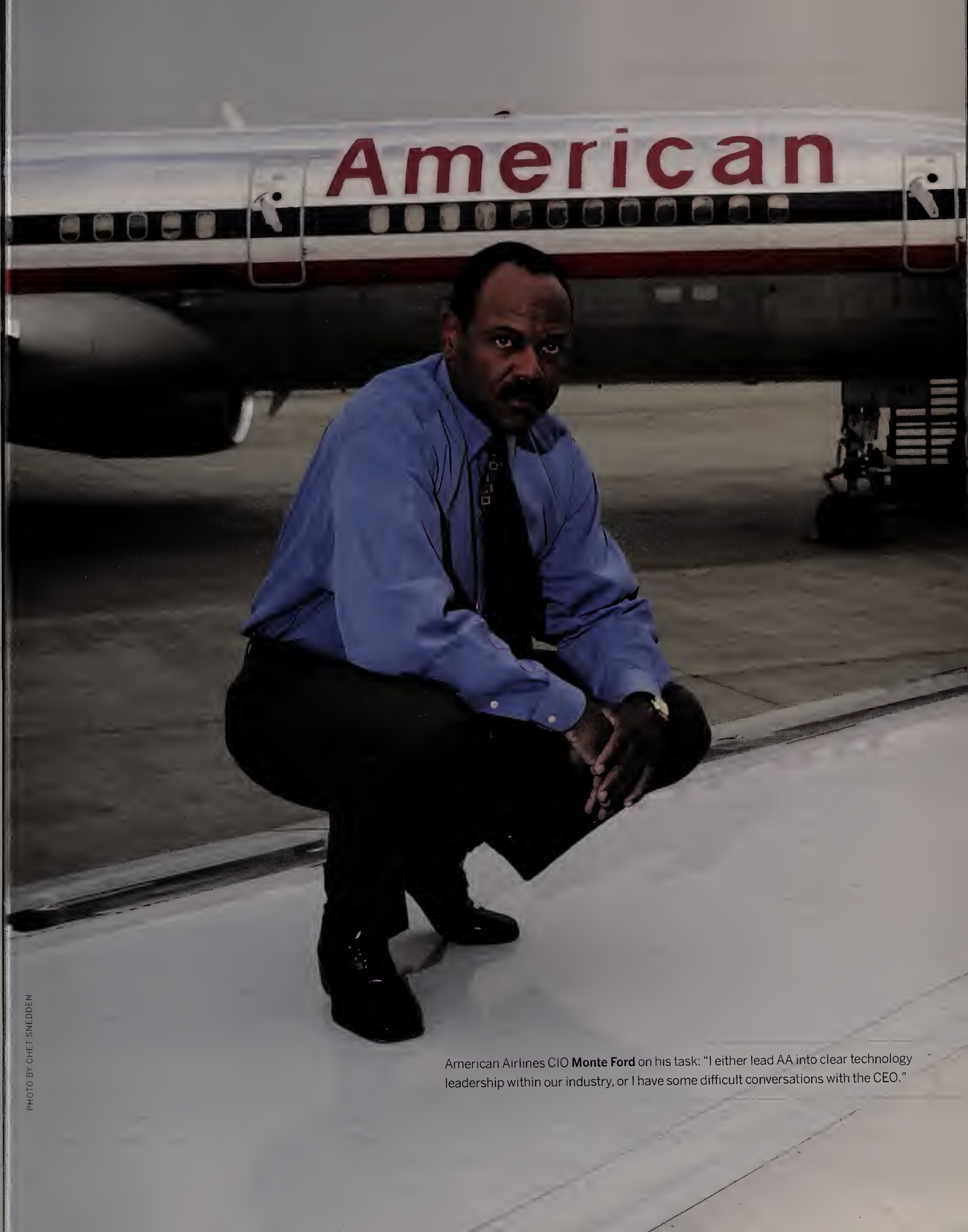


PHOTO BY CHET SNEDDEN

American Airlines CIO **Monte Ford** on his task: "I either lead AA into clear technology leadership within our industry, or I have some difficult conversations with the CEO."

A CENTER SEAT

In the middle of all this is Monte Ford, 43, American's senior vice president and CIO, who joined the airline two years ago at a calm-before-the-storm moment with orders (from a CEO who emphasizes IT's importance) to rebuild his company's IT department almost from scratch as it goes through one of the most difficult periods in its 76-year history. Ford and his IT group are smack dab in the middle of American's efforts to rethink every aspect of its business. Almost everything the company does to right its ship and recover from the past couple of years—from the recession to the 9/11 terrorist attacks—affects IT's roles and plans.

For his part, Ford remains upbeat in the face of the utterly downbeat straits the company finds itself in. The fact is, he gets lift from his group's central role. He believes ITS (for Information Technology Services) can deliver.

"All of the things Don Carty said we have to do—with the exception of moving seats on some of the airplanes—has technology as the long tent-pole, has technology at the center of it, has the delivery of technology as the fundamental part of the ability to make the change," Ford says. "There's not a product, service or enhancement we can make that doesn't involve technology."

One key example: The depeaking efforts—spreading out flights more evenly throughout the day, a vital part of American's altering the way it runs the hub-and-spoke model—rely on ITS's operations research group, which used its data warehouse capabilities to calculate new flight and airport scheduling. The depeaking that started at Chicago's O'Hare Airport in April 2002 was a proving ground for the airline to announce the changes at its Dallas/Fort Worth hub that start this month.

American is not alone in its quest to wring critical efficiencies and insights from IT. All the airlines, in fact, will need to focus on making IT an integral part of the business strategy if they expect to survive the inevitable, cyclical shakeouts that are part and parcel of playing in this highly competitive industry, says Henry Harteveltdt, senior



THE LEADER DON CARTY

Twenty-one-year company veteran became chairman and CEO of AMR (AA's parent company) in 1998. Served as president and CEO of Canadian Pacific Airlines (1985-1987). Carty has declared that everything at American Airlines is fair game for change.



THE TEAM BUILDER MONTE FORD

Joined American as CIO in December 2000, tasked with bringing back IT leadership, which had been outsourced primarily to Sabre. Ford was tossed immediately into a whirlwind of unforeseen disruptions, including the recession, a merger with TWA and 9/11.



THE TECH GUY KEN WILCOX

TWA's former CIO who came to AA in a merger. As vice president of technology services, he's responsible for the airline's IT infrastructure.



THE OPERATIONS GURU SCOTT NASON

Serves as vice president of operations and planning technologies; in that role, he directs the airline's capacity planning and revenue management. Heads management team looking for immediate cost savings. Nason was AA's first CIO, serving from 1996 to 2000.



THE CUSTOMER PROFILER JOHN SAMUEL

Oversees customer-facing technologies, including AA.com, the frequent flier program and airport automation. A member of AA's leadership strategy task force. Samuel helped create AA.com, one of the first and largest e-commerce sites on the Web.

analyst at Cambridge, Mass.-based Forrester Research. "Airlines will probably compete more on technology than on the actual in-flight product," he says.

Making IT central to the airline's reinvention is one thing; paying for it is another. Like many CIOs, Ford's biggest challenges are squeezing the highest efficiencies out of a budget that keeps springing leaks and making those dollars that do seep his way work harder. Especially during this slump, which is forcing AA and its com-

petitors to look closely at every nook and cranny of their business (had a hot in-flight meal lately?)—or risk going the way of Eastern, Pan Am and PeopleExpress before it.

Ford sums up his role in AA's turnaround bluntly: "I either lead AA into clear technology leadership within our industry, or I have some difficult conversations with Don."

THE QUADRUPLE WHAMMY

Carty hired Ford in December 2000 and tasked him with a daunting challenge: Bring

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back the technology leadership—decision-making power over the architecture, design and engineering of AA's IT systems—that had parachuted out the cockpit door when the Sabre Group, AA's longtime IT outsourcer, was spun off earlier that year.

Ford planned on using 2001 as a transition period as he created a new IT organization. He wanted a select group of IT and businesspeople to have an orientation period on IT and the airline industry before developing an IT leadership plan. American would build the right kind of IT group, focus on integration projects and develop a 2002 budget. It sure seemed reasonable at the time.

In short order, however, Ford and his still-forming team had to deal with a quadruple whammy.

1. The \$742 million purchase of TWA. Ford says the TWA merger announcement, in January 2001, didn't make him put aside other projects as much as it refocused him on the goal of bringing TWA into AA's IT environment. Ford also notes that AA didn't have to reinvent the wheel. "It became another large set of activities and projects that we had to integrate into our planning cycle.... TWA already had a great methodology and capability in its organization; it now had to focus on integrating its systems into American," he says.

With the merger came TWA's vice president and CIO, Ken Wilcox, who would take charge of the IT infrastructure for the combined airlines (see "Control Tower," Page 58).

AMERICAN AIRLINES at a Glance

Headquarters | Fort Worth, Texas

Employees | 112,502

Revenue, 2001 | \$15.8 billion

Net loss, 2001 | \$1.8 billion

Cities served | 240

Passengers carried, 2001 | 80.7 million

Fleet (number of airplanes) | 833



The mission for **Ken Wilcox**, American's vice president of technology services and former TWA CIO: Simplify a legacy environment that has systems dating back to the 1960s.

2. An economic recession that severely affected business travel. Soon after work on the TWA merger got going, in spring 2001, came the beginnings of the recession. Ford immediately cut \$50 million from the ITS budget. (American won't disclose its total IT budget, but the company expects 2003 spending to be down another 10 percent.)

American also slowed down long-term technology projects, such as the implementation of some wireless productivity tools in the maintenance and engineering departments, and a rotatable parts inventory project (for parts that wear out, then are fixed and reused).

3. Sabre's announcement that it was selling its outsourcing business to EDS. The EDS-

Sabre deal, announced March 15, 2001, included the \$670 million sale of Sabre's IT outsourcing business. Sabre also hired EDS to run its IT systems for \$2.2 billion over 10 years.

Talk about change management. Ford says the impact of that transaction was as much cultural as quantitative or qualitative. He made a lot of trips to EDS and Sabre locations to talk with employees about AA's strategy and what role they would play. As that deal kicked into gear, Ford slowed down more projects, some in the flight area (the process of getting planes out on the tarmac and in the air) and some at airports (service and productivity enhancements), many of which involved Sabre and EDS people.

SIMPLIFY, SIMPLIFY

AA's legacy systems won't be around too much longer

KEN WILCOX, American Airlines' vice president of technology services, describes the situation he found himself in after coming over from TWA, where he had served as CIO. "I would say that the prior model was as decentralized as you can possibly imagine. Every business unit had its own relationship with third parties like EDS and Sabre; each had its own IT folks. It was totally lacking an enterprise scope of what the impact was of the decisions people made."

Wilcox played a key role in the successful integration of his former airline, which began in April 2001 and ended in December 2001 (see "Connecting More than Flights," Page 66). In the meantime, he began to form the new technology services organization to oversee IT architecture, infrastructure and networks. Wilcox was in Miami with his leadership team for a strategy session last Sept. 11 when he learned of the hijackings. They all made it back to Dallas after a 27-hour bus ride. "I expected a lot of our IT strategy to get fully derailed for a while," he says, but adds that by mid-October, they were back recruiting for the new group.

Wilcox oversees a complex legacy environment that, he jokes, includes just about every piece of hardware, software and networking gear ever sold. "You're talking about a \$20 billion a year enterprise with an embedded legacy of technology that goes back to the 1960s," Wilcox says.

That fact makes one of Wilcox's primary missions, simplifying the IT portfolio, a much greater challenge than it would be at a smaller airline. He rolls out a large technology standards chart, which he equates to the kind of map a city planner would use to plan for future growth. It lays out the architecture today and what it might look like each year for the next three years. It shows lots of systems and products in 2002 but gets simpler (with fewer systems and products) across the page, in 2003 and beyond.

One of his group's biggest projects is an upgrade of AA's entire network. Previously, some 600 locations worldwide, such as airport counters and city reservation offices, were running on a proprietary, IBM Token Ring network. In the fourth quarter of 2000, they began replacing that with an IP network. That massive effort, which employed more than 1,000 people, involved the recabling of more than 50,000 hardware devices, 2,500 100MG Ethernet switches and a significant connection of wireless devices (using 802.11b) to the wired network in some 80 airports. As of June, 99.7 percent of the cabling in domestic locations had been completed. Wilcox believes the AA IT group's work is central to American's fortunes: "We're in front of the business; we're helping them figure out what's possible and where they can go," he says.

-T.D.

4. The events of 9/11 caused an immediate reassessment of everything at the airline.

The events included two American airliners, one that hit the World Trade Center and another that struck the Pentagon.

"We stopped everything we were doing and reevaluated it all," says Ford. "We spent a great deal of time participating with various government agencies and airport authorities around getting the country back up and running in a secure manner that also focused on trying to provide convenience to our customer base."

Once again, Ford says, he and his team looked at their portfolio of projects to make those focusing on customer service and security the priority. Projects with long-term ROIs were either slowed down or jettisoned. He was also forced to cut back spending further. But it wasn't a slash-and-burn exercise, Ford notes. After all, American still had to finish

the TWA integration by the end of 2001. (See "Connecting More than Flights," Page 66.)

In person, Ford manages to keep a sense of humor about his first year at American. "All that was not part of the interview process with Don," he says, chuckling, leaning forward in his chair. Ford is tall, at least 6 feet 2 inches, with large brown eyes, a wide mustache and a commanding presence. He's dressed in an open-collared, greenish-hued short-sleeve shirt, slacks and well-polished loafers. (Ford says that when Carty became chairman in 1998, he decreed casual dress every day, a welcome benefit in the often stifling heat of Fort Worth, Texas, AA's headquarters.)

Ford adds, "What I've learned in business is that it's not a question of what things will happen to disrupt your plan. It's a question of how you respond to those things when they do, because they will."

A STAFFING RUBIK'S CUBE

Because he was building up an IT department and dealing with the disruptive events of 2001, Ford spent a lot of time figuring out how to fit people into his staffing puzzle.

Upon joining AA, Ford inherited about 100 IT people who had helped manage the Sabre and American relationship under the direction of then-CIO Scott Nason (Nason is now vice president of operations and planning technologies). There were also a few hundred, very decentralized IT people scattered throughout the 40 business units that ITS needed to bring together under one roof as part of an American-wide consolidation.

For example, AA.com, previously managed by the marketing organization but now part of ITS, supplied 80 people. Ford insourced, or hired back, 259 people from Sabre and brought 15 of his former colleagues from The Associates First Capital,

the financial services company where he had served as CIO before coming to American. Ford also needed to deal with about 4,500 folks who were transitioning from Sabre to EDS. And American kept 33 IT people from TWA following the merger (the rest of TWA's IT staff was laid off). ITS now has about 900 employees.

Ford says that, relative to the other hurdles he's faced, his biggest challenge was bringing this diverse mix of people together around a common culture, a shared set of values and goals. The ITS vision was this: Deliver innovative, high-return technology solutions to propel the airline into clear industry leadership. Ford and his team also developed a set of guiding principles: Emphasize the value of people, and give them training, education and rewards; communication; a simplified technology environment; execution without excuses; and continuous improvement.

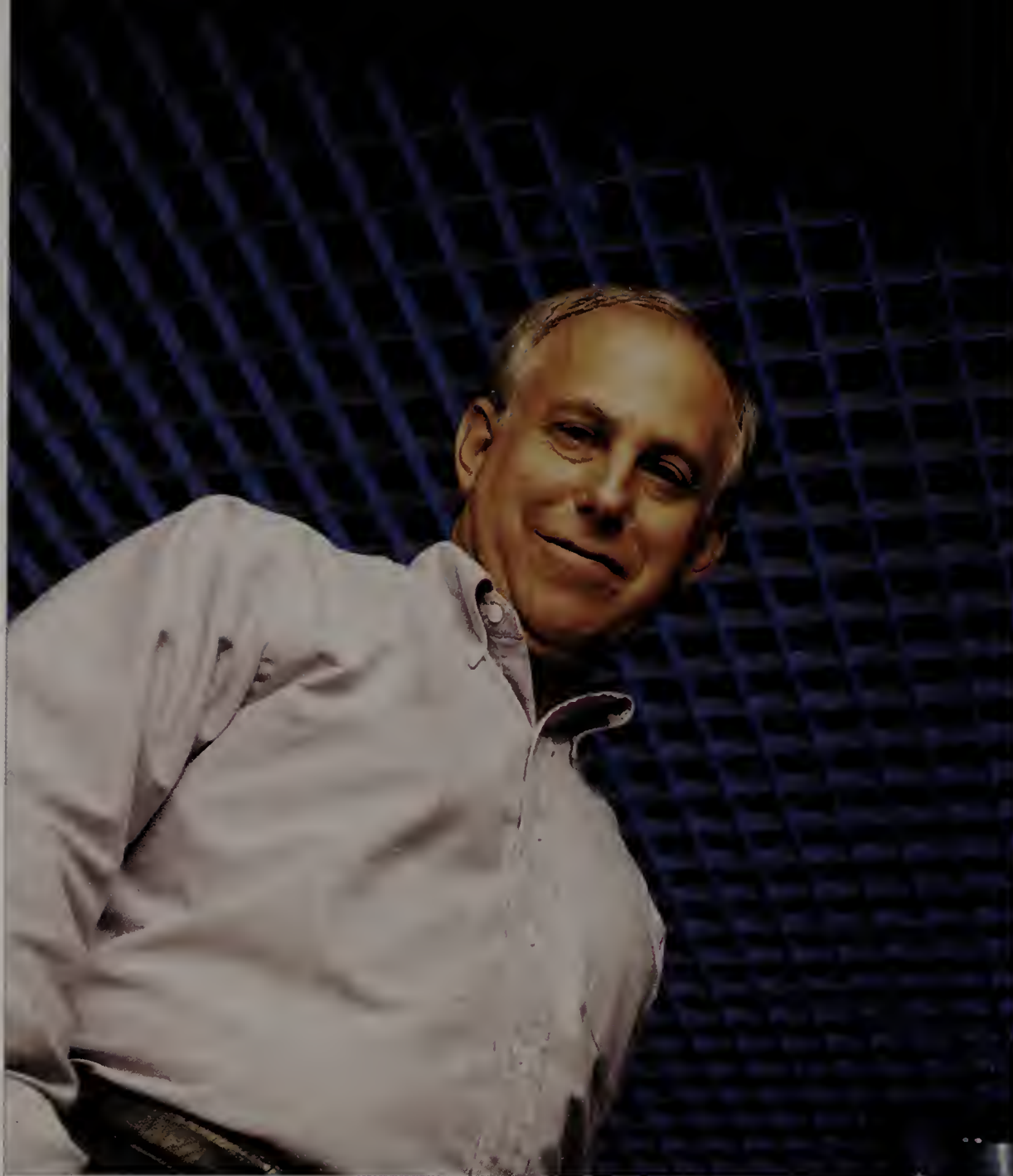
PROJECTS MOVE AHEAD

And so IT projects continue, with an emphasis on wringing costs out of processes that make air travel happen. The airline is tackling a massive network upgrade, simplifying its complex, aging legacy environment and rolling out new customer service initiatives, like its self-service kiosks in airports. At the same time, it's drastically cutting back on its day-to-day operational costs and sunseting some systems because of a cutback in funds for IT.

One area where American is investing a lot of energy is airport technology. That means an emphasis on the self-service kiosks, which lower costs and reduce the hassle of standing in long check-in counter lines. Customers with e-tickets can use the kiosks to check in (with or without bag-

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AIRLINES? "All of the things we have to do has technology at the center of it," says Monte Ford, American's CIO. Do you think technology can rescue American? Go to **TALK BACK** at comment.cio.com/talkback.



Scott Nason, American's first CIO and Monte Ford's predecessor, now heads a leadership team seeking efficiencies throughout the airline's business model.

gage), get a boarding pass and change their seating assignment. John Samuel, vice president of customer technology, says that by the end of the year American will have more than 700 of the kiosks in U.S. airports. The company is also rolling out wireless curbside check-in, and roving agents are using wireless devices to help speed up lines in terminals.

Samuel, a laid-back sort who frequently interjects his conversation with a folksy chuckle, also oversees AA.com (he helped create the website six years ago), which was overhauled earlier this year. According to Samuel, booking volumes have roughly doubled every year since the site's birth; about one in four customers now book trips on the Web, and nearly half of those are using AA.com, which gets an average of 600,000 hits each weekday.

Samuel says the Web will soon be the sin-

gle largest sales outlet for the airline. That's a good thing: This year, AA will pay some \$350 million in booking fees for tickets sold via travel agencies and websites using computer reservation systems like Sabre. The more tickets AA can sell direct, the more savings that will drop right down to the bottom line.

Ultimately, American wants to make as much of its processes electronic as possible. In June, it announced it was moving to 100 percent e-ticketing by December 2003. AA also wants to make airport transactions all-electronic. Dan Garton, executive vice president of marketing, says that there are currently 72 paper transactions at airport counters, such as pet kennel purchases, senior citizen discounts and upgrade coupons. Garton says they not only want to make those virtual, they want to reduce the overwhelming number of those transactions.



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"It's not just technology's job to automate complicated solutions," he says. "Its job is to eliminate, reduce and clarify."

DOG DAYS IN THE AIRLINE INDUSTRY

In spite of the upbeat nature of Ford and his team and all their actions, there are reasons to wonder about the future of the nation's airline industry. While the overall picture is about as ugly as the airlines hope it can get, experts like Steven Morrison, an economist at Northeastern University in Boston, say it's likely American will survive, though in a smaller form.

Morrison, an economics professor at Northeastern, says that the industry, a low-margin endeavor even in good years, is still staggering from the aftereffects of the recession and Sept. 11. "I'm not worried about their fundamental survival. They may survive smaller. The industry needs to lose capacity but not that much," Morrison says.

Last year the industry lost a record

counting the 7,000 job cuts announced in August) and significantly reduced its operating expenses.

Business travelers, who generally pay higher fares and constitute a good chunk of the major carrier's revenue, have been slow to come back. There are a number of reasons: Increased security measures in airports have made flying more time-consuming; company travel budgets, which took a major hit after 9/11, have not rebounded the way the airlines had hoped; and face-to-face meetings are being replaced by phone and videoconferencing.

When they do travel, business fliers are now scouring the Internet, looking for the best deals on sites like Travelocity (owned by Sabre), Expedia and Orbitz. They're also gravitating toward lower-cost airlines, like JetBlue and Southwest (both have been profitable this year).

What's American to do? Carty thinks that there are fundamental problems in the way the major carriers do business. "I believe

10 years," he said.

Put another way: "The planes are nearly full, but they're losing money," says John Kasarda, professor of e-commerce and IT at the Kenan-Flagler Business School and director of the Frank Hawkins Kenan Institute of Private Enterprise at the University of North Carolina at Chapel Hill.

Then there's the potentially devastating wild card of a war with Iraq. In a September speech, Carty said a war could throw more carriers into bankruptcy.

EVERYONE INTO THE BOAT

Ford has been dealing creatively with the dilemma he and many CIOs currently face: How to maintain critical IT investments in the face of decreasing IT budgets.

"The best time to implement capabilities and efficiencies is the time when you are cutting back and being more discriminate about the investments you make," says Ford, adding that with less money available, American moves forward only on those

Budget cuts for IT are not necessarily all bad, CIO Monte Ford says: "Productivity on a per-person basis in IT is actually higher now than in times when we had more money."

\$7.7 billion. Through July of this year, the year-to-date revenue of the major carriers was only 77 percent of the same period in 2000. In May, revenue passenger miles (RPMs), the basic measure of production, declined 8.7 percent compared with May 2001 (one RPM equals one fare-paying passenger transported one mile).

American reported a second-quarter net loss of \$495 million. Its systemwide traffic for August declined 9.3 percent from a year ago, while the airline decreased its seat capacity by 9 percent. Year-to-date, through August, RPMs were down 12.1 percent systemwide versus a year ago. To help stop the bleeding, AA slashed its capital spending this year from \$3.6 billion in 2001 to \$1.8 billion this year, laid off 20,000 workers (not

what we're up against in the airline industry is much more than a cyclical problem.... We need to take a long, hard look at literally everything we do, including some things that have always made good sense, to see if they still make sense in the new reality," he said in a speech at a transportation conference in New York City earlier this year. That includes reengineering the high-cost hub-and-spoke model, especially because airlines like Southwest, which don't use that model, can keep turnaround times on the ground briefer and thus keep their airplanes in the air longer. Carty also said the pricing model is badly broken. "It's hard to defend a system whereby the average fare we in the industry collect has—in nominal, not inflation-adjusted terms—declined over the past

projects that have the highest impact and payback in the shortest period of time.

The result, Ford says, is that "the productivity on a per-person basis in the IT organization is actually higher now than in times when we had more money."

Ford says his department's portfolio approach to IT investments makes that possible. He compares it to an individual investor who is bringing home less money. "You may be more discriminate about how you invest. You still need to make investments that are domestic, international, short term, long term, high risk, low risk." He says that companies that view IT only as a cost don't follow this approach. "They say, How much am I spending on IT, and how much can I cut?"

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CONNECTING MORE THAN FLIGHTS

An inside look at AA and TWA's IT integration

AMERICAN AIRLINES CIO MONTE FORD sheds no modesty when it comes to the integration of TWA's computer systems. "It's a modern miracle," he says. "There is nothing that I have seen that comes as close to being as [complex and as] complicated as that was." Hundreds of applications were modified to accept TWA data, and a new IP network was rolled out in more than 150 airports and other locations.

Most of TWA's systems were converted eight months after AA acquired TWA in April 2001. The most critical cutover involved TWA's real-time passenger reservation system, which took place in December 2001. "The people [involved] did a phenomenal job. They must have done a phenomenal job," Ford says. "They're all asking for promotions."

Below is a brief chronology of the integration.

SEPTEMBER TO NOV. 30, 2001

Replaced all workstations, ticket, bag-tag and boarding-pass printers at all TWA airports. Implemented a switch in the Sabre system that allowed Sabre-connected devices to connect to Worldspan (TWA's computer reservation system) via Sabre.

NOV. 3, 2001

Migrated 203,150 TWA passenger name records (PNRs) from the Worldspan reservation system to Sabre in preparation for the operational cutover on Dec. 2. More than 99 percent of the PNRs were automatically loaded without error or intervention.

Implemented electronic ticketing between Worldspan and Sabre systems.

DEC. 2, 2001

The Big Day: TWA operations, including its flight operating system and passenger reservation system, were successfully cut over from Worldspan to Sabre, and all flights began flying under the AA carrier code. Almost all systems and departments, including airport customer services, flight operations, and cargo, food and beverage, migrated to AA systems and procedures. Mileage from members of TWA's Aviators Club frequent flier program migrated to AAdvantage accounts.

JAN. 1, 2002

All TWA employees converted to AA payroll and benefits systems.

APRIL 30, 2002

The migration of TWA's network infrastructure to AA's network was completed, including e-mail for all TWA employees.

MAY 18, 2002

The migration of the maintenance and engineering systems from TWA's Kansas City, Mo., data center to the EDS data center in Tulsa, Okla., was completed. —T.D.

SOURCE: AMERICAN AIRLINES

Ford also says cutbacks in spending make people more open to new ideas and more receptive to the kinds of fundamental changes American is making in its business to restore profitability.

To help his predicament, he's enlisting AA's key technology vendors in the battle. Earlier this year, he called about 12 of his most strategic vendors and consultants—including EDS, HP, IBM, Sabre and Sun—to a powwow at company headquarters. He told them that they could bring two people; most brought a senior salesperson and a company executive. All of them sat in the same room, competitor next to competitor, as Ford laid out AA's IT strategy and vision, a vision based on productivity, simplicity and innovation.

"I wanted our vendors and technology partners in the boat with us," he says. Ford told them what AA expected of them, their role in being a good supplier and AA's role in being a good customer. He didn't pull any punches—he said that companies that wanted to make software implementations as complex and costly as possible would not be doing business with AA very long. On the other hand, those vendors that worked with Ford to innovate and simplify the company's technology systems, even if it meant reducing their revenue streams, would be rewarded.

Ford clearly relishes his role at the IT helm of the world's biggest airline. "It's the largest and most complex business problem in the world," he says, referring to the airline industry. How much IT can help invigorate American's fortunes remains to be seen. But Ford and his team won't be bystanders in the effort—Carty has made it clear to Ford that technology is the engine that will drive the business going forward. However, it's clear that American will be taxiing for a while on its runway filled with struggles before it—and the industry—leaves the ground for bluer skies. **CIO**

E-mail Senior Editor Todd Datz at tdatz@cio.com.

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How with a little money and a lot of smarts, quick win software can fetch huge rewards

BY DAVID L. MARGULIUS

WHEN TOM MURPHY, CIO of Royal Caribbean Cruises, was forced to scale back his IT team last fall in the face of declining travel bookings, he decided to get scrappy. As part of battening down the hatches to efficiently support a 28,000 person company with 25 cruise ships, Murphy created a SWAT team within IT to identify quick hits—low-cost, high-return efforts.

The idea, as Murphy put it, was to “reinforce that you’ve got an IT team that’s thoughtful, creative and can do more with less.” That idea has worked. By Murphy’s count, the team has returned more than \$3 million to the company’s bottom line so far. “It’s been a huge success,” he says.

In the current economic climate, IT executives are pushed harder than ever to provide a quick return on small, well-planned technology investments. Vendors, smelling opportunity, have jumped in with a wide array of low-cost—\$100K or less—quickly deployable products and services. “There are a lot of vendors trying to convince you that there are quick wins out there right now,” says Matt Kesner, CIO of Fenwick and West, a Palo Alto, Calif.-based law firm. While some quick wins are real, others are elusive—or even nonexistent.

We asked CIOs where their company found a big bang for relatively small bucks and how CIOs can make sure quick wins don’t turn into quicksand. It’s advice you can bring to the bank.

Reader ROI

- ▶ How CIOs save big money with small investments
- ▶ The hidden costs behind some quick wins
- ▶ The “gotchas” that can plague quick win projects

ILLUSTRATIONS BY JOEL HOLLAND

SEE SPOT FETCH



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PASSWORD TO SAVINGS

As infrastructure management grows more complex, it has become ripe for low-cost, high-return initiatives—if you know where to look. One of the best quick wins Royal Caribbean found, according to Murphy, was a password reset program called P-Synch from Mercury Information Technology. For \$25,000, the software allows employees to reset their passwords whenever necessary. This contributed to cutting call volume to the internal IT help desk by 35 percent.

Because Royal Caribbean had downsized its help desk team along with the rest of IT, the new software was critical to maintaining service levels with few staffers. “Plus, we’ve given the users control, and users love control,” says Murphy.

Joe Iannello, senior vice president and CIO of the Movado Group, a watchmaking company based in Paramus, N.J., had a similar experience with a program called UpdateExpert from St. Bernard Software that lists for under \$50,000, which automatically deploys and updates patches, fixes and other software to user desktops and servers. Iannello’s group supports 750 machines around the world and was able to cut staff time needed for patches and updates by 75 percent. As a result, the software paid for itself in less than six months.

“Being able to quickly and remotely deploy those fixes without having to visit those PCs is a great time-saver for us,” says Iannello, who adds that the software also lets Movado be more proactive about having the latest security fixes in place.

Iannello cautions that companies get



SEE SPOT'S FETCHING HOUSE

such simple solutions may not scale to serve the entire enterprise. A password reset package such as P-Synch may work great for 4,000 users, he notes, but not necessarily for 20,000 users as a long-term, enterprisewide solution.

this early in its existence.

Sheri Anderson, CIO of Xilinx, found that by using Web services company Grand Central Communications she was able to establish a connection with an important

As infrastructure management grows more complex, it has become ripe for low-cost, high-return initiatives—if you know where to look.

maximum benefit from this type of investment only if users are geographically dispersed. “The more machines you have and the more distributed they are, the more valuable something like this is,” he says.

Royal Caribbean’s Murphy also warns that

INTEGRATED COST-CUTTING

Integration can be a money pit—that’s not news. EAI frameworks and EDI implementations can cost millions of dollars. The potential for cheaper connections both inside and outside the firewall exists with Web services, even

external business partner quickly and for a fraction of the cost she’d expected. The key is to avoid one-off custom integration projects with high, ongoing maintenance costs.

Xilinx, with \$1 billion in revenue and 2,600 employees worldwide, is a semicon-

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ductor company that outsources most of its manufacturing and other functions. "We have lots of needs for partner interfaces," explains Anderson. "They're not optional." When one partner suddenly needed to exchange large amounts of unstructured data with Xilinx, Anderson brought in Grand Central to quickly deploy a secure Web services-based data exchange and format translation capability.

"It was quite a big win because I didn't have to go build support for a new kind of protocol, which would have taken weeks," says Anderson, who noted that the total cost of the service, at under \$200,000 annually, was less than one-tenth what it would have cost to solve the problem using a traditional value-added network.

Better yet, Anderson could leverage the solution for other projects without additional custom development because Grand Central's hosted service included prebuilt connections to many other data exchange formats and protocols. Once Xilinx built its connection to Grand Central, it could communicate with additional partners in multiple formats without more custom development. That fit right into Anderson's plan. "I'm trying to get rid of customization to manage down my costs," she says.

BUDGET BANDWIDTH

Cut your bandwidth demand and you'll not only save real dollars, you might also improve performance. Irving H. "Bubba" Tyler, vice president and CIO of Quaker Chemical, found a way to do both using cheap (less than \$100,000 for five) WAN data compression appliances from Peribit Networks. Quaker, a Conshohocken, Pa.-based producer and manufacturer of specialty chemicals for the steel and automotive industries, has 44 offices and 14 manufacturing plants scattered around the globe, connected by everything from frame relay to T1s. In the midst of rolling out a completely Web-based ERP system, Tyler realized he needed a better solution to his bandwidth problem than just adding capacity.

"We were very hungry for simple, easy,

low-cost ways to increase our bandwidth," he says, "[because] most of our existing [frame-relay] connections were at a limit." Quaker found the appliance solution to be cheaper in both dollars and in training costs than the other three options—paying for burst speeds, buying more capacity from the telecom carrier or a caching solution that would have required software, servers and more support. "With the appliance, we literally plugged in two cords, and we were done," Tyler explains.

Routing optimization appliances can be another quick win in the bandwidth category. John Benzinger, vice president of IT for FreeMarkets in Pittsburgh, a hosted sourcing and e-commerce auction services provider, says paying less than \$100,000 for one such device from RouteScience Technologies yielded substantial cost savings, and more important, performance benefits.

The appliance, which identifies optimal network paths for return packet traffic back



quick win gotchas

Hidden costs, broken promises and unfulfilled goals abound if CIOs aren't careful

Underpromise and overdeliver.

"First of all, don't tell anybody that it's going to be a quick win," advises Royal Caribbean Cruises CIO Tom Murphy. "This is all about managing expectations; don't presell it. The best wins are the ones that surprise people."

Make sure the solution meets your needs.

Watch for the bait and switch, warns Quaker Chemical CIO Irving Tyler: If you're not careful, you may find out halfway in that there's some other investment required "to make it really work." Think of the end result (scale, functionality) you want and make the vendor quote on that, he says. "Otherwise you get stuck in this sort of incremental world."

Also, watch out for management and integration gotchas. "Can you manage it yourself on an ongoing basis, or are you connecting yourself to a lifelong partner?" asks Tyler.

Get the right people and skills involved up front.

Make sure you have people who know enough to ask the right questions up front, says Cascade Designs CIO Ken Meidell, whose company deployed a Web services integration project with outside consultants. "We learned a little more than we thought we would along the way, and that could have been a bad thing," says Meidell, whose internal development team realized halfway through the project that it would have to learn C#, a language it had not previously supported.

Watch the money.

Xilinx CIO Sheri Anderson implemented a voice-over-IP system for the company's worldwide offices that cost less than \$200,000, saved the company \$10,000 a month in telecom costs and yielded major productivity benefits. But the project required putting a server in each office, which went on Anderson's IT budget, while the cost savings accrued to the individual offices, which had been paying the telephone charges directly. "It's one of those odd wins for IT, a common gotcha," says Anderson. "But it's the right thing to do for the company."

—D.M.

A large pink elephant is superimposed over a background image of a business meeting. The elephant's head and trunk are in the foreground, while several business professionals are seated around a conference table in the background, looking towards the elephant. The scene is set in a modern office with large windows.

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to customers, was easy to install and yielded a major improvement in page display times. "We had it installed within two days and were immediately seeing benefits," Benzinger says. "We wouldn't have been able to provide the same level of service without it, and we also would have had to put more engineers on diagnosing end user problems."

Both Tyler and Benzinger advise CIOs to test bandwidth optimization solutions thoroughly before deploying them, however. The best of these devices can be put in listen-only mode so that staffers can evaluate their compression and routing recommendations, and likely bandwidth savings, before anything gets put into production. "Prove it to me. I

pany saved \$1.5 million a year in long-distance charges by switching its 350 banking pavilions and offices over to VoIP. Total infrastructure cost, including servers and software licenses, was less than \$100,000 (plus the phones at \$400 each).

"Now we can call all of these locations for free," Jabbour says. The quality is high enough that the bank is looking at rolling VoIP out to its call centers as well.

QUICK PERFORMANCE FIX

Application performance monitoring and management is an increasingly high-leverage category, with direct impact on both hardware and support costs—and on the hard-

it." Plus, he adds, "The amount of business risk that's mitigated is huge. If my site were to go down on the Friday before Mother's Day, I wouldn't be here on Monday."

CUTTING COMPLEXITY

Sometimes a quick win comes from just letting someone else's hardware and software sweat the details of a complex process. Max Levchin, CTO of Mountain View, Calif.-based PayPal, found this out when he purchased a \$30,000 bulk e-mail delivery appliance from IronPort Systems.

PayPal, which has 17 million customers and sends out millions of e-mails every week, was using a big collection of its own machines—

While some quick wins are real, others are elusive—or even nonexistent.

want to experience it," says Tyler.

Fenwick and West's Kesner, who also deployed a Peribit system, had similar advice: "Look under the hood, test it like crazy, and make sure it really works."

TALK ABOUT SAVINGS

In addition to data savings, it's also possible to find quickly cuttable costs in telecom space. Kesner, for example, deployed a Cisco software-based VPN application for 700 employees for \$30,000. "It's been a huge hit for us," Kesner says, "well out of proportion to the cost."

Before installing the always-on, secure virtual network, the firm had relied on dial-up connections and nonsecure browser-based applications for its on-the-go lawyers, with unsatisfying results. "We're a professional services firm," Kesner says. "With the new VPN system, we're getting a lot more productivity, more billed hours, and people are able to work at home."

Voice-over-IP (VoIP) systems are also showing promise as a way to cut recurring telecom costs with relatively low up-front investment. Anthony Jabbour, CIO of Amicus Holdings in Falls Church, Va., a banking subsidiary of CIBC in Toronto, says his com-

to-measure but critical end user experience. For Enzo Micali, senior vice president and CTO of Westbury, N.Y.-based 1-800-Flowers.com, application performance software was a quick win that enabled him to both control hardware costs and guarantee performance in mission-critical situations.

The week before Mother's Day, 1-800-Flowers.com typically receives as many as 100,000 Web orders a day. To handle that kind of demand, Micali needed a better view into the capacity of his three data centers to maximize performance relative to his infrastructure costs. For less than \$200,000, Micali got a suite of software from Mercury Interactive that lets him deploy both functional and performance testing to simulate quality of service under peak loads.

"How long does a user in Seattle take to add a dozen roses to their basket?" asks Micali, noting that the answer can be very different when volume spikes to 10 times the average. Mercury's software has helped the company simulate Mother's Day, improve performance and put a cap on hardware costs while avoiding risk.

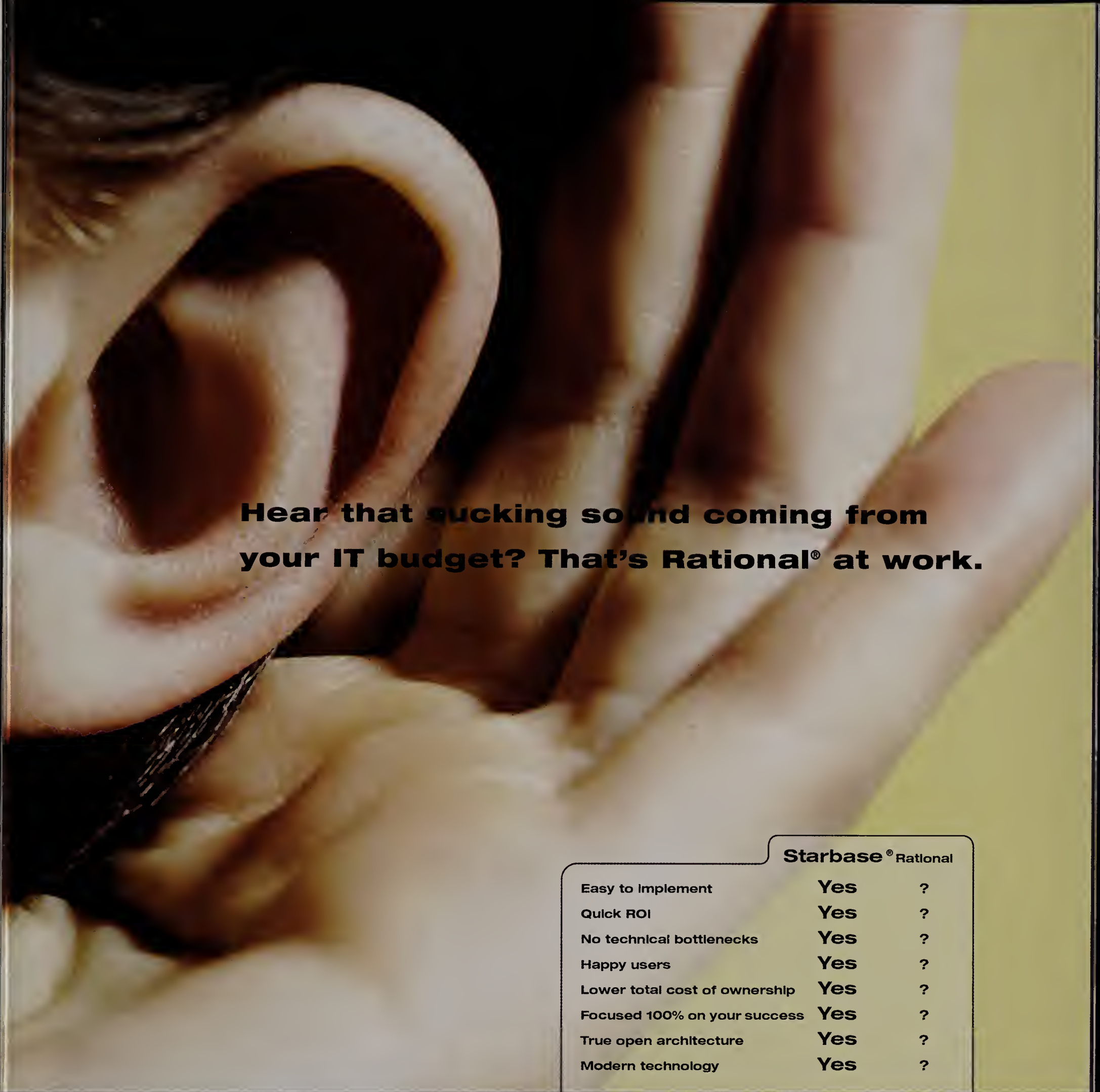
"Relative to the benefit, it's inexpensive," Micali says. "It's cost avoidance. You don't buy additional hardware if you don't need

running an open-source mailer program—to deliver all the messages. "If the [mail] engine broke, you'd have half a dozen guys working on it," recalls Levchin, who remembered two or three blowouts that resulted in both a loss of business and customer goodwill.

Since the company installed the IronPort mail appliance, which is optimized to assemble and send half a million messages an hour, as well as handling bounce-backs and related issues, PayPal's maintenance costs have dropped by 50 percent while stability greatly increased. "It's a cheap packaged solution that takes away the complexity—definitely a great deal," says Levchin. One deal among many—apparently—for CIOs who are willing to look. **CIO**

Know a way to save some big money? Drop us a line at letters@cio.com. David L. Margulius is a San Francisco-based technology analyst and consultant. He can be reached at dave@enterpriseupdate.com.

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HOW TO MEET TOMORROW'S PRIVACY RULES TODAY

When it comes to preparing for impending security regulations, health-care CIOs have some simple advice: Act now BY BEN WORTHEN

IN LATE JUNE 2000, TOM MARTIN MADE THE BONE-CHILLING DISCOVERY

that no CIO ever wants to make: His network had been hacked. As CIO of the University of Washington Academic Medical Center in Seattle, Martin had good reason to be concerned; his hospital, like most, was moving toward electronic records and communication with patients. An anxious Martin investigated the breach immediately, and to his relief he concluded that for the past month the hacker had been using sniffer software to gain access to a computer in the pathology department—not the core medical systems. Thankfully, no data was lost. Martin chalked it up to a learning experience and wisely upgraded the hospital's firewall.

Then on Dec. 6, a third party published a handful of the university's medical data on the Web—including patient names, addresses

and Social Security numbers—as a way to point out security flaws at the center. It also reported that the hacker, a 25-year-old Dutchman named Kane, had 5,000 such records. In a matter of days, the story, complete with sensationalized interviews with bewildered patients, was all over the news.

A shocked Martin renewed his search, eventually tracing the stolen information's origin to an Access spreadsheet used by quality assurance personnel. For the first time the CIO understood the scope of the security challenge he was facing. "The hacking made us rethink our approach

and realize that [the IT department] doesn't have control over all the medical data."

Fittingly, the hack occurred while Martin was in the process of tightening access to the hospital's core medical systems in response to impending security regulations mandated by the Health Insurance Portability

and Accountability Act (HIPAA). The original intent of HIPAA, which Congress passed in 1996, was to create EDI transaction standards in the health-care field—a move that would save the federal government, the nation's largest health-care payer, \$32 billion a year. Turning

Reader ROI

- ▶ How to prepare for evolving security regulations coming to your industry
- ▶ How health-care CIOs have taken a difficult task and made it look easy



After experiencing an embarrassing hacking that became widely publicized, Tom Martin, CIO at the University of Washington Academic Medical Center, believes that “privacy is everyone’s responsibility, and CIOs need to be more conscious of it.”

Privacy

a good idea into effective legislation is not a simple process, however, particularly when it involves technology policy.

"Before the computer era, there was an established ethic," says Jim Klein, a Washington, D.C.-based vice president and research director for Gartner. "No one would think about walking into the pharmacy and asking for your medical records, just like the hardware store wouldn't tell your neighbor what you are buying." The Internet-fueled proliferation of data—and data availability—has created a paradox: Businesses demand the benefits of a technology-enabled world along with the relative anonymity, or privacy, that the pretechnology world provided. The government's response to that paradox is regulation that balances business's need for increasingly detailed data with the public's demand for privacy. The Graham-Leach-Bliley Act of 1999 set rules for the financial services industry, and two yet-to-be-passed bills, the Cyberterrorism Preparedness Act of 2002 and the Consumer Privacy Act of 2002, will set security standards for the public sector and govern the use of online information, respectively (see "Be Prepared," this page). HIPAA will do the same for health care.

HIPAA's final bill gave Congress three years to come up with a comprehensive set of privacy and security regulations. When the deadline came and went without any progress, Congress had to turn the task over to the U.S. Department of Health and Human Services (HHS), which kicked it around for another three years. As of press time, HHS was expected to publish completed regulations on Oct. 16—less than six months before the April 14, 2003, go-live date. As many health-care CIOs recognized, six months is not enough time to prepare. So for the past couple of years, they put themselves in the awkward position of implementing systems and policies in order to meet an unknown set of requirements.

It's a challenge that CIOs in all industries will face as the give-and-take between technology advances and public wariness con-

tinues. Luckily, their health-care counterparts have developed a process that could serve as "the blueprint you would follow to comply with any regulation," says Claudia Allen, CIO of St. John Health, a \$1.6 billion Detroit-area health-care network. Here's a look at that blueprint.

Do the Obvious Things Now

Health-care CIOs have a simple yet effective approach to impending regulation: Don't wait for final legislation to make obvious enhancements. "For instance, we know that we are not going to be able to put protected health information on the Web without encryption and authentication," says Rick Skinner, CIO for the Oregon region of Seattle-based Providence Health System. "And we know that we will need to add role-based access to our systems."

Be Prepared

If you think you won't be affected by upcoming privacy legislation, you'd better read this

GRAHAM-LEACH-BLILEY ACT OF 1999: Passed in 1999, the GLBA requires financial services organizations to create privacy policies, which they must share with their customers, and governs how information can be shared within and between institutions.

CYBERTERRORISM PREPAREDNESS ACT OF 2002: Sen. John Edwards's (D-N.C.) proposal would tighten and continually update information security requirements for federal agencies. Eventually, all government contractors could be subject to the bill.

CONSUMER PRIVACY PROTECTION ACT OF 2002: This yet-to-be-passed legislation, sponsored by Rep. Cliff Stearns (R-Fla.), requires all online businesses and offline corporations that engage in e-commerce to inform consumers what information is collected and how it is used. Furthermore, consumers have the right to limit the amount of information a website can collect, allowing a visitor to leave a website without surrendering personally identifiable data, such as a name, address or credit card number.

FEDERAL PRIVACY AND DATA PROTECTION POLICY ACT OF 2002: Sen. Robert Torricelli (D-N.J.) introduced this bill that requires government agencies to come up with privacy policies, appoint a privacy manager and undergo third-party privacy audits.

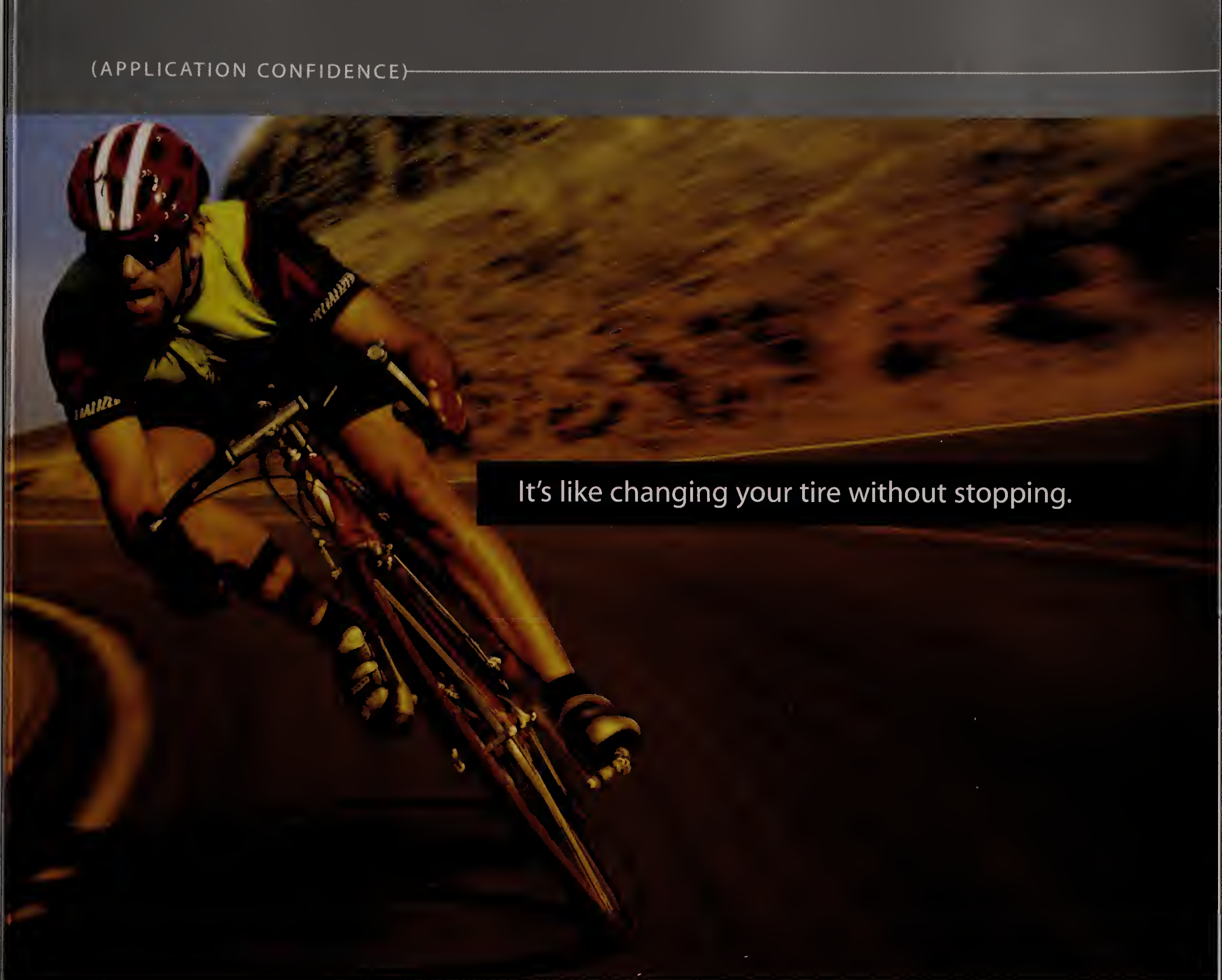
—B.W.

Acting well in advance not only saves time in the long run, it also gives CIOs a chance to make changes that will improve the quality of the business operations. "If you [view these changes] simply as federal regulation, then they have little intrinsic business value," says Skinner.

Sam Miller, CIO of the University of Arizona Medical Center in Tucson, notes that one of the most pervasive security problems in health care is that doctors don't take the time to log in and out when entering patient information into hospital computers. And when they do, "passwords often wind up written [on the side of the computer], held on with sticky tape," he says. "It is essentially unsecure."

In addition, Miller anticipates that password protection alone won't cut it under HIPAA—and even if it does, it's a sloppy

(APPLICATION CONFIDENCE)



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practice. So two years ago he piloted a biometric-based sign-on system, in which doctors scan their fingerprints and immediately see a list of applications they can access. The system improved security and eliminated a half-dozen keystrokes, saving doctors' time and encouraging more secure behavior. "[With biometrics] they get logged in automatically; when they walk away, they are clocked out," says Miller. "That is a tremendous improvement in workflow for the staff." (The vendor that supplied the biometric system has since ceased operations, and Miller has closed the program. He is, however, now evaluating alternatives to restart it.)

Use Common Sense

Process improvements don't have to be as flashy as biometrics, however. The rule of thumb is common sense. For example, when St. John Health's Allen upgraded the hospital's desktops in order to ensure that no patient data could be stored on C drives, she standardized on one desktop configuration, simultaneously meeting a probable HIPAA requirement and making her support staff's job much easier. "We're always looking to make things better and lower the cost," she says.

Health-care CIOs advise locking yourself in a room and coming up with 10 actions you can take immediately to improve information security. That's basically what the policy-makers are doing, says Catherine Schulten, a Bethesda, Md.-based Sybase health-care business development manager who has testified before committees working on HIPAA. Furthermore, the privacy and security workgroups are staffed by knowledgeable people who are trying not to over-

whelm health-care organizations, adds Schulten, who has also written reviews of HHS policies for her company and its customers. CIOs agree and add that about 70 percent of the draft legislation is common sense. "In the absence of HIPAA, I would probably do most of these things anyway to ensure a reasonable amount of security," says Schulten.

Look to the Past

David Marckel, an IT manager with Blue-Cross BlueShield of Tennessee, headquartered in Chattanooga, advocates checking draft legislation against previously passed legislation as another way to reassure yourself. Marckel notes that many of the security and privacy proposals in HIPAA, such as electronic signature guidelines, are similar to those that have evolved through recent Medicare legislation, which dictates rules for

health-care organizations that expect to be reimbursed by the government. HHS is in charge of setting both HIPAA rules and Centers for Medicare & Medicaid Services (CMS) standards. It follows, Marckel believes, that HHS wouldn't contradict itself. "We used CMS privacy and security audit guidelines as a basis," he says. "We figure if it passed a CMS audit, it should pass HIPAA regulations."

Teach Your Organization Well

At first glance, HIPAA may look like a textbook IT project. But just as controlling the flow of data isn't as easy as tightening a few core systems, CIOs have learned that meeting HIPAA requirements is not just an IT project. "As we learned more about HIPAA we realized that it was weighted more toward health-care operations," says St.

In an effort to kill two birds with one stone, Sam Miller, CIO of the University of Arizona Medical Center in Tucson, implemented a biometric-based system to promote more secure user behavior and to improve workflow.



PHOTO BY DAN COOGAN

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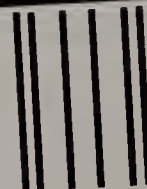


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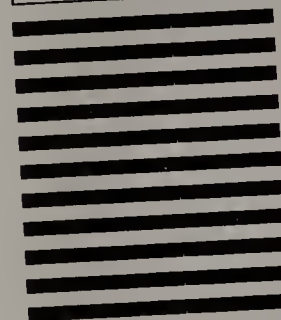
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John's Allen. CIOs must make sure everyone—from the CEO down to the individual contributor—knows that protecting information is a companywide initiative that will require new behavior.

A CIO can build the world's most impenetrable firewall, but if a resident who works

says Bradley Harslem, CIO of Addison, Texas-based health-care management services provider Concentra. Despite the stigma that consultants are opportunistic profiteers, Harslem says that their objectivity is more important than any stereotype. "Consultants gave us a framework for not reinventing the

ten also made it illegal for pharmacists to fill prescriptions that a doctor phones in. In other words, the pharmacist couldn't fill the prescription until the patient gives written consent that the information can be used—a giant inconvenience for a sick person. Dobish had planned to set up a national consent tracking database within his organization so that he would have been prepared for that requirement. Fortunately, Health and Human Services announced in late August that it would drop the requirement. However, Dobish's work in that area was not lost; Rite Aid now intends to use that framework to comply with an acknowledgement tracking form that is expected to be included in the final regulation.

CIOs must make sure everyone—from the CEO down to the individual contributor—knows that protecting information is a companywide initiative that will require new behavior.

in an HIV clinic loses his PDA, for example, then all bets are off. Likewise, there is no point in restricting access to a patient's record if doctors discuss the case within earshot of nonauthorized personnel (or reporters). Although educating the organization at large is not the CIO's job—"You can't just tell someone to rearrange the furniture in a clinic office to make sure the printers aren't accessible," says Providence's Skinner—it is the CIO's responsibility to make sure the CEO understands the impact of the regulations.

Fortunately, it's easy to make a compelling argument: If a health-care organization violates HIPAA and doesn't have a clear, written policy to prove that it was an honest mistake, top executives can go to jail. The end result of the privacy clause, says Skinner, is that "tens of thousands of people have to receive some amount of training."

But before behavior can be modified, organizations must first conduct a gap analysis to assess how much training is necessary. That job is best done by a consultant,

wheel," he says. "They helped us jump-start the brain work." With help from consultants, Concentra has devised more than one type of training program to see which works best. Harslem hopes taking those steps will help Concentra avoid the bad publicity that could stem from an honest mistake.

Plan, Don't Do

Regardless of how well-crafted draft legislation is, there are inevitably parts that could have debilitating consequences. In these cases, it is important to plan as if they will make the final bill. But instead of making changes now, "you wait for [the regulations] to get decided and hope you will not be thrown into a crisis," says Dutch Dobish, vice president for regulatory law and privacy officer for Rite Aid in Camp Hill, Pa. One hot-button issue with HIPAA, for instance, has been consent requirements, which Dobish says "defied common sense." The consent requirement was intended to protect patients whose information falls into the wrong hands by forbidding the recipient of the information from using it without expressed written permission. For instance, an optometrist who has access to an eye exam study from a nearby university hospital would be restricted from using the information as a way to target potential customers.

However, the regulation as originally writ-

Lobby for Change

Those who strongly believe a piece of legislation is blatantly wrong have another alternative: lobbying. Professional groups such as the American Medical Association, the American Hospital Association and the national BlueCross and BlueShield Association all lobby on behalf of their members. But that isn't always enough. Most CIOs interviewed for this story have talked or written to their congressional representatives. Mary Henderson, executive director of the national HIPAA program for Oakland, Calif.-based Kaiser Permanente, testified before an HHS committee against the consent requirement, which she adds "was of no value and cost a lot of money." She also worked with Kaiser Permanente's lobbying group in Washington to make her case.

Health care will continue to evolve as new technologies go mainstream. And it's the same for any industry. "When it comes to privacy," says Martin, "it is everyone's responsibility, and as service providers we need to be more conscious of it. Whether I am dealing with financial information or health information, it has become part of our culture to respect privacy." Besides, he adds, "it is generally the right thing to do." **CIO**

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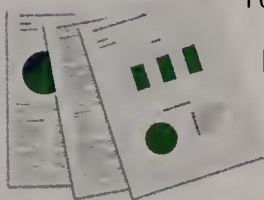
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Case Files: University of Maryland's Robert H. Smith School of Business

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THE PLAYERS

HOWARD FRANK

Dean of the Smith School

SANDOR BOYSON

Chief of information strategy and director of the Smith School's Supply Chain Management Center

ERNIE SOFFRONOFF

Portalmaster

CASE ANALYST

CARL FRAPPAOLO

Cofounder and consulting practice leader, Delphi Group

Portal U.

How to connect students, faculty, staff, alumni and businesses so that they can share the school's services, research and applications? Go for the gateway approach.

BY MERIDITH LEVINSON

FIVE YEARS AGO, Howard Frank joined the University of Maryland's Robert H. Smith School of Business as dean. He had recently ended a four-year tenure with the Defense Advanced Research Project Agency, which invented the technology that became the Internet, and the wide-eyed technologist was looking forward to his next challenge: He wanted to make the Smith School the premier technology-oriented business school in the world.

"We had the raw material here, and I had the support of the president of the university and the faculty," says Frank.

To reach his lofty goal, he rejiggered the curriculum so that it now emphasizes courses in e-business, supply chain management, business process integration and global knowledge management. He also hired a slew of new instructors—55 in the past four years.

While the curriculum shifted in response to the business world's need for tech-savvy graduates, the school's IT infrastructure remained a relic of the past. It was ironic that a business school trying to turn out tomorrow's tech leaders should be hobbled by such a dated system.

The fact was that the school lacked the

proper infrastructure to support its 3,500 students and faculty on both its main campus in College Park, Md., and at its satellite campuses in Shady Grove, Baltimore and Washington, D.C. Users on the satellite campuses could not get the same level or quality of access to applications and systems that students on the main campus received. And students and faculty on the main campus could run applications only from a networked PC; they could not access the Smith School's systems remotely.

"We have large financial databases that our faculty in the finance department uses," says Sandor Boyson, the Smith School's effusive information strategy chief and director of its Supply Chain Management Center. "When they leave this institution at night, those [databases] are no longer accessible to them because they're physically contained behind the firewall."

In addition, students and faculty were forced to use e-mail to share ideas and edit documents, which created all sorts of headaches when it came time to synchronize document versions, never mind the tax it levied on the network.

Further complicating students' lives was the problem of identities. Students had to memo-

size as many as 16 user names and passwords for each online course and for each system they used on a regular basis. They also complained that they didn't have access to a centralized calendar and had to look in as many as four places to get information on social and academic events on campus.

To rectify those woes, the school invested several million dollars to create a Web-based portal—the eSmith Web Portal—where students, faculty, staff and external partners such as alumni, other academic institutions and businesses can access all the services, research and applications they need to manage and register for classes, post and read syllabi, download white papers, participate in online classes, and share research.

“With the portal, you log on once, it recognizes who you are, it sends authorization to the systems you need to use, and you're in,” says Boyson. “You can get documents on your shared drive no matter where you are as long as you have a Web browser and an Internet connection.”

The eSmith portal, which went live Oct. 1, is personalized for each user based on his preferences and role in the academic community. It also facilitates collaboration on research projects, and ultimately provides the foundation for the knowledge sharing that's necessary to keep a business school competitive with, if not exceeding, the Ivy Leagues.

Origins of the Portal

The idea for the eSmith portal came from work the Smith School's Supply Chain Management Center did with the state of Maryland and the U.S. Department of Defense in developing portals. Boyson says the experience gave him a good understanding of the benefits the Smith School could reap by launching something similar. His experience deploying online course management tools in the past, coupled with the school's involvement in Educause (an association charged with advancing academia through the innovative use of IT), gave him an idea of the basic functionality needed.

Around January 2001, Boyson drafted a proposal for the dean outlining how the

PORTALS: IT'S ACADEMIC

BY CARL FRAPPAOLO

IT IS REFRESHING—and about time—to see that an institution of higher learning is keeping pace with the realities of the workforce. While I am aware of some schools that include courses on knowledge management in their IS and MBA programs, the University of Maryland's Robert H. Smith School of Business has put its money where its mouth is. For this, the school is lauded.

But there are more lessons to be learned from this case study. For several years, portals have been touted as a tactical application of KM. This case study clearly illustrates some of the major reasons that is so. Foremost, though, the experiences of Sandor Boyson, the school's information strategy chief, illustrate once again that the technology challenges always pale when compared with the cultural. And he hit one critical issue dead on: trusted content.

For any portal or knowledge system to be accessed, let alone embraced, there must be assurances that its content is valid, timely and authentic, and that information ownership and security is maintained—in a word, trustworthy at all levels. This is not a technology issue. Indeed, within the university population, Boyson's implementation team was given a relatively receptive audience. But Ernie Soffronoff, eSmith's portalmaster, says he still spent “far less time trying to figure out creative technical solutions than I did building the relationships and creating trust with the people who I needed to integrate the portal with.”

We also saw that the the biggest overarching benefit typically provided through a portal is a single point of access to myriad information sources in a collaborative environment. Once that is established in a trusted framework, the portal is basically guaranteed a successful deployment, especially given that there also exists a clearly defined business need and visionary sponsor. Sure, there is always the need to tweak front ends and features based on experience, but when it comes to knowledge management, trust and facilitated-personalized access are academically fundamental.



Carl Frappaolo is the cofounder and consulting practice leader of Delphi Group, a Boston-based company providing consulting, education and research on information and knowledge management.

Smith School could use a portal. The tech-savvy dean approved, and Boyson gathered a core team of the school's CIO and CTO, as well as a portalmaster, systems administrator and two application specialists, who began working on a prototype that fall.

Team members first created the basic infrastructure, which they borrowed from the eMaryland portal the Supply Chain Center had built. It consists of the university's lightweight directory access protocol, or LDAP, server, which essentially functions as

a directory of everyone in the Smith School community and which allows portal users to get customized views of content and access to applications based on who they are. A portal server from iPlanet (a Sun Microsystems product) provides security. There's also an application server from ATG and an Autonomy search engine. The application and portal servers run on hardware and software from Sun Microsystems; Oracle provides the back-end databases.

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offer products that are Web-centric, based on open standards, interoperable with the university's LDAP, and because they required minimal customization.

Once the core infrastructure was established, the development team surveyed and met one-on-one with department heads, faculty, staff and students about what they wanted to see in the portal. The finance department in particular wanted to make sure students could access databases containing historical corporate financial information often needed for assignments. Based on feedback, the team also added online course management, instant messaging and collaboration applications to the portal.

By February 2002, they had a beta version that one of the school's e-commerce classes could evaluate.

Ernie Soffronoff, a graduate of the Smith School who now serves as eSmith's portal-master, says that most of the changes made

were to screen prompts intended to guide the user from one page to another. For example, during the beta phase, the log-in page asked for a "user ID." But the students often have more than one user name, and they didn't know which to use. In the next iteration, the log-in screen asked specifically for the user's university directory user name.

Usability testing of the portal involved making sure it could stand up to thousands of hits at a time. Since Sun Microsystems had already done a formal scalability study of eMaryland and since the Smith School was using the same architecture, the team spent only two days stress-testing eSmith.

Technical Challenges, Cultural Solutions

In adding collaboration and single sign-on applications to the portal infrastructure, the team ran into a spate of technical hurdles. They had to figure out a way to give external

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users, like alumni who aren't in the university directory, access to the portal. Working with the university's IT department, the team created subcommunities of users that can be dynamically generated within the LDAP directory to be recognized even if they are not usual Smith School members.

The biggest challenge was integrating the university's siloed campus systems so that a user would automatically have access to all the systems. That meant the LDAP servers, HR, e-mail and student registration systems, and several others—which previously required separate log-in names—would have to recognize a single log-in from the portal. The development team wound up writing

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special code for each system to teach it to accept the portal system's user names.

After that issue was cleared up, they discovered another one: system time-outs.

Each campus system had its own limit of how long an account could be inactive before a user was logged off. The portal could be inactive for 30 minutes, but the student registration system shut off after 15 minutes. "We had to make sure that the portal would honor the time-outs of these systems," says Soffronoff. Again, the development team handled this case-by-case, adhering to the security concerns of each system.

During the process, the development staff, Soffronoff in particular, had to build relationships with the individual owners of each of the systems. "It was a little surprising to me," says Soffronoff. "I spent far less time trying to figure out creative technical solutions than I did building the relationships and creating trust with the people who I needed to inte-

grate the portal with. That was a harder task in most cases than any of the technical work that needed to go on for the integration."

Vive La Différence

Although the portal wasn't fully implemented when this story was reported, Boyson says that by the summer of 2002 professors had managed more than 50 courses via the portal. "In two semesters, we've had 2,226 online users of the course content service the portal provides," he adds. And that's almost half of the Smith School's current 5,000 user base.

These days, with the online collaboration space, students can submit their homework online, and with the course management system, professors can return it, graded, via the portal. Students at satellite campuses can get the same level and quality of access to systems. And graduate students and faculty can collaborate with private sector partners

like PepsiCo on data-mining projects.

While the Smith School may not yet be ranked numero uno in business technology, it is consistently ranked among the top 25 business schools nationwide and among the top 10 technology business schools. The knowledge management infrastructure and capabilities the portal offers will provide remote students with a more stable learning environment and all students with a richer academic experience. With the new collaborative capabilities, the Smith School can publish high-quality research with greater frequency, which will help the school maintain its edge, if not surpass the pack. And isn't organizational improvement the goal of every enterprise that undertakes a knowledge management project? **CIO**

Senior Writer Meridith Levinson specializes in coverage of B2C e-commerce. Reach her at mlevinson@cio.com.

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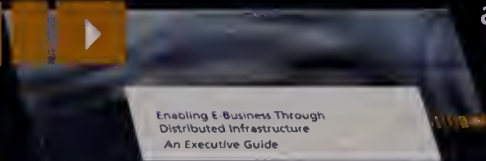
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Digital invoicing
is the next big step in
e-business transactions

TO BILL OR NOT TO BILL (ONLINE)

BY
ELANA VARON

For most companies today, B2B transactions start and end with the purchase order—with billing and payment still largely done the old-fashioned way, on paper.

But many companies are increasingly seeing fully digital transactions—including invoicing—as the wave of the future to save money and improve efficiency. For those companies that buy and sell goods or services online and use the Web to manage their logistics, electronic invoice presentment and payment (EIPP) technology—sending and receiving digital invoices—is the next logical e-business step. And it's a trend CIOs need to pay attention to.

Early adopters of these new Web-based financial applications, including AT&T Wireless, Con-Way Transportation Services and General Electric, have begun to achieve savings throughout the enterprise. Among the benefits: In addition to lowering invoice processing costs, companies can reduce billing errors, improve cash flow, provide better customer service, and obtain more timely and accurate data for analyzing how they spend money or sell their products. A year ago, TowerGroup, a market research company, predicted that by 2005, the number of business and consumer bills that will be presented and paid electronically will approach 5 billion world-

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Though companies have long known that they save money when they pay (or get paid) electronically, it's the ability to manage invoices online that makes the business case. From a survey of more than 100 U.S.-based corporations with at least \$100 million in revenue, Avivah Litan, vice president and research director of financial systems for Stamford, Conn.-based Gartner, concludes that suppliers that bill their customers electronically can earn back their investments—and save an average of \$5.7 million a year—if a mere 2.3 percent of their invoices are “viewed, paid and disputed” online.

But there are still many hurdles to overcome. For instance, the break-even point for bill recipients is less clear. John Hagerty, vice president with AMR Re-

integration picture. But as more and more companies aim to eliminate paper from business payment transactions, it's a challenge many CIOs will have to meet.

Customers Like It...

Many EIPP software vendors market their products to financial officers of supplier companies with the promise of faster payments and, as a result, improved cash flow. It may be a coincidence, but the technology started to flourish as the economy soured. “It fit into the business climate that we're in,” particularly after 9/11, says Bob Novaria, treasurer of BP North America and sponsor of the e-billing implementation project for the U.S. division of aviation fuel and lubricant seller Air BP. Customers using Air BP's electronic billing and payment

THE KEY TO DERIVING THE MOST VALUE FROM
ELECTRONIC INVOICING TECHNOLOGY IS TO
INTEGRATE IT WITH BACK-OFFICE
APPLICATIONS LIKE ERP, PURCHASING, CALL
CENTER AND ACCOUNTS PAYABLE SYSTEMS.

search in Boston, observes that EIPP vendors first concentrated on helping sellers generate electronic invoices and are only now writing code to help buyers load the data into their ERP systems for processing.

The key to deriving the most value from EIPP technology is to integrate it with back-office applications like ERP, purchasing, accounts payable, order management and call center systems. “Integration is where you get the direct savings,” says Judy Cavalieri, director of e-business strategy and marketing with AT&T Wireless in Redmond, Wash. Given that integrating systems and processes is one of the biggest challenges CIOs face today, EIPP can further complicate an already daunting

service, which is provided through Citibank, do pay faster, says Novaria, in part because Warrenville, Ill.-based Air BP and its customers can now identify billing mistakes before an invoice is past due.

But as with many e-commerce applications, it's the purchasers of goods and services, rather than the suppliers, that are driving adoption. Jacquelyn Barretta, vice president of information services with Con-Way Transportation Services based in Portland, Ore., only began online invoicing in March after contending with mail delays caused by the anthrax scare. The logistics company, which logged nearly \$2 billion in sales last year, hopes to cut invoicing costs by 90 percent by switching to electronic billing. But its cus-

tomers, many of whom have received invoices via electronic data interchange for many years, had as their first priority getting copies of their shipping manifests online and being able to check the status of their shipments. "Just seeing an invoice electronically versus on paper doesn't save [customers'] money," says Stewart McCutcheon, CTO with Elemica, a B2B exchange for the chemicals industry based in Wayne, Pa. The real payoff comes when companies can use their supply chain management systems to reconcile the invoice with purchase orders and delivery records, and net out what they owe without anyone having to rekey data or pick up the phone to dispute errors.

In May, Fairfield, Conn.-based General Electric implemented software from DataCert that allows its legal department to receive electronic invoices from several hundred outside law firms that support the company. The project responds to a corporate mandate that GE's business units eliminate paper from their purchasing and payment process, says Suzanne Hawkins, senior counsel for legal operations, whose job includes choosing information systems to support GE's 930 in-house attorneys. Most of the lawyers already use a corporate purchasing system and pay their bills through a common accounts payable system. The EIPP software will integrate the two systems, says Hawkins.

Hawkins anticipates significant financial and productivity savings when she gets her first set of annual metrics next month. Among its benefits, the EIPP software allows GE to automatically validate every invoice it gets according to the terms of its contracts with each firm, rather than having lawyers manually review the bills for erroneous or duplicate charges. Hawkins plans to tie the EIPP software into the purchasing system this month. When bills come in, they'll be checked against purchase orders to ensure that enough money has been budgeted—eliminating more manual data

CIO.com See Elana Varon's column on online billing, **READY OR NOT FOR E-PAYMENTS**, then add your own comments. Find the link at www.cio.com/printlinks.

entry. In addition, the DataCert system will automatically deliver invoice details to GE's Outside Counsel Management System, which Hawkins uses to analyze how the company spends its annual budget of more than \$200 million for external legal help—yet more data that was formerly entered manually. By mid-June, 19 business units out of 30 and 250 out of 400 domestic law firms had gone online.

As a big spender, GE had plenty of clout to push its legal suppliers, many of them also large companies, online. Cavalieri, with AT&T Wireless, says competition for thousands of small business customers influenced her company's decision to deploy EIPP technology last year. The company fielded an online account management, billing and payment application from software vendor Edocs for its 3 million small business and consumer customers. About 600,000 use it so far. The company is exploring a similar application for large enterprises that now get their invoices on a compact disc but felt more pressure to start with the small business customers that didn't have an online billing and payment option. As part of AT&T Wireless's online customer service package, electronic billing and payment has helped reduce customer turnover by about 20 percent, she says. Meanwhile, the company saves money by reducing the number of billing questions handled by call center reps.

...But Integration Takes Work

One can't, however, buy an EIPP solution that comes already integrated with any ERP, supply chain, CRM or financial management system.

AMD
me.

John Van Decker, senior program director for application delivery strategies with Meta Group in Stamford, Conn, says it will take another three years before the major ERP vendors incorporate Internet-based invoice payment solutions into their accounts payable software. Gartner's Litan says, "The biggest technical issue that companies have is integration with a legacy system or ERP system."

Hawkins says DataCert had to write a custom electronic invoice format so that invoice data from the outside law firms approved by an inside GE lawyer could be delivered electronically to GE's accounts payable system, the Outside Counsel Management System and the purchasing system.

Starting about a year ago, integration with the first two systems took about six months and "was a lot of work on our side and [DataCert's] side," says Hawkins.

Con-Way's Barretta says she decided to build her EIPP system in-house because she could not find packaged software that met her company's needs, particularly modules that would be easy to integrate with the existing information security system the company uses to authenticate its online customers. "We're an Oracle Financials user, and we looked very closely at what they had to offer, but at the time we started building the application they didn't have what we wanted," says Barretta. "Package add-ons

don't fit into the same security scheme."

But the integration needs didn't stop there. Her team also had to reproduce the business rules programmed into the system that generates paper invoices so that the electronic bills are sent to the right place on the right schedule. Next, she plans to develop an XML-based application that will allow Con-Way to send invoices directly to customers' back-end systems (data from the current application comes in a Microsoft Excel spreadsheet).

The Bottom Line

Aaron McPherson, research manager with Framingham, Mass.-based IDC (a sister company to CIO's publisher), thinks it will be easier for companies to achieve the benefits of EIPP once the early adopters set up. "The next group of adopters won't have to spend as much money," he says, because they can take advantage of the work the EIPP vendors have already done integrating the first group of suppliers and buyers. According to Gartner's Litan, new EIPP software deployments by billers sending invoices cost around \$400,000, not including annual maintenance. She didn't survey payers using the software to receive invoices because, she says, not enough of them were doing it to obtain adequate survey results.

For now, McPherson says, it's mainly large companies with a huge billing or payment volume that can justify the investment. At Elemica, McCutcheon thinks he can build critical mass by offering members a standard way to transfer invoice and payment information through the exchange so that they don't have to set up links with every trading partner. "People aren't really seeing this as a competitive advantage," says McCutcheon. "It's an efficiency play."

Says GE's Hawkins: "It costs us less money to process an electronic invoice. Ultimately, we are not going to have any paper invoices." **CIO**

What's on your B2B e-commerce to-do list? Tell Senior Editor Elana Varon at evaron@cio.com.

E-Billing Takes Two

Electronic invoicing works best when your partners join in

UNLESS YOUR TRADING PARTNERS are willing to bill you or pay you online, there's little use in deploying electronic invoice presentment and payment (EIPP) technology. Getting them on board requires being flexible and minimizing the amount of system-to-system integration needed to participate. Here's how some buyers and sellers have brought their trading partners online:

- **AT&T Wireless** gives small business and consumer customers the choice to manage their entire relationship with the company online through its website or to use the Web for just some transactions. Judy Cavalieri, the company's director of e-business strategy and marketing, says AT&T Wireless is also considering whether to offer customers financial incentives to go paperless.

- **Con-Way Transportation Services** pushes the convenience of being able to route invoices to multiple recipients and eliminate mail delays, says Vice President of Information Services Jacquelyn Barretta. Customers have to arrange to be authenticated by Con-Way's systems but can otherwise choose how they view the data—on Con-Way's site or downloaded into their own systems.

- **General Electric's** legal department informed its outside law firms that its goal was to have all firms doing work for GE to send invoices electronically. But the corporate legal office let the business units decide how quickly resisters—mostly small law firms—had to comply. Firms that aren't doing much GE business right now are allowed a pass, though they will probably be required to start using the system if they get a significant case, says Senior Counsel for Legal Operations Suzanne Hawkins.

- **Air BP** wrote middleware to translate Web-based information into the electronic data interchange format used by its ERP systems, says Bob Novaria, treasurer of BP North America and the sponsor of the company's e-billing project. Then Air BP sold small customers on the benefits of going paperless.

—E.V.

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Rapid Deployment

The Amazing Tr

Cirque du Soleil is more than aerial acrobatics and gymnastic symmetry. Behind the scenes, an information technology tour de force keeps the show running smoothly. BY ALICE DRAGON

PHOTOGRAPHY BY FURNALD/GRAY



Traveling IT Show

The midsummer sun beats down on an East Boston parking lot—a vast stretch of asphalt dotted with trailers and Porto Potties and surrounded by a chain-link fence. A small fleet of Bobcats darts about, pounding a giant circle of metal stakes into the expanse of tar. The ring foreshadows the huge blue and gold big top that will host Quidam, one of Montreal-based Cirque du Soleil's five traveling shows that feature artists performing extraordinary physical feats along with music, costumes and characters that make ordinary circuses seem downright pedestrian.

While the big top will dominate the village of tents and trailers that will spring to life during the next eight days, the success of the Boston engagement of Quidam requires that a complex IT infrastructure spring to life as well. The man responsible for making that happen is Jean-Pierre Fontaine. Although the performers and most staffers get a week's vacation between cities, the demands of rapidly moving IT from one city to the next sometimes mean Fontaine, North American tour computer and telecom coordinator, goes nearly three weeks without a day off. After tearing down the Detroit production at 10 p.m. on the previous Sunday and spending all day Monday driving to Boston, Fontaine was onsite by 8 a.m. on Tuesday, getting a head start on the IT setup for the next show. Thanks to a recent overhaul of the IT infrastructure supporting Cirque's tours, he can get the job done well within the eight-day setup window before the Boston premiere.

Reader ROI

- ▶ How Cirque du Soleil overhauled its IT infrastructure
- ▶ How Cirque standardized its mobile IT systems for rapid deployment

Rapid Deployment



(1) Jean-Pierre Fontaine, tour computer and telecom coordinator, replaced spools of heavy copper wire with fiber-optic cabling he can easily carry in one hand. **(2)** Following the painted lines and circle of stakes pounded into the asphalt like a surreal crop circle, **(3)** it's all hands on deck for the tent raising on day two of setup. **(4)** First up is the big-top ceiling, followed by the tent walls and the entranceways.

A BANKER JOINS THE CIRCUS

Danielle Savoie, Cirque du Soleil's first-ever vice president of IT, perches on a folding chair in the IT trailer in Boston and reflects on the changes she's instituted since joining the circus in April 2000. A review of tour IT (the systems that support the business operations) in 2001 revealed that each tour's infrastructure was unique, she says, "like little different islands." Savoie wanted to standardize and streamline the IT supporting the tours with the goal of simplifying and shortening the set-up and tear-down processes. "IT is the last thing to leave a site and the first to be in production at the next location," she says. "It's on the critical path to be

ready for the premiere [in each city]."

Having managed projects that reengineered all branch processes and technology for Desjardins, the largest credit union in Quebec, Savoie was well acquainted with the challenges of efficiently supporting multiple remote operations. Cirque du Soleil offered the additional challenge of mobility. "In a standard company, the Pittsburgh branch is probably still going to be in Pittsburgh next year," she says. "At Cirque, we have five tours on the road, and they move every two months."

Savoie's group standardized all servers and workstations on Windows 2000 with Active Directory and redesigned the IT

road cases (the large, padded trunks on wheels that transport and protect the tour's IT systems), switching to compact rack-mounted servers with standardized cable connections. Now Fontaine no longer has to unpack and reinstall the servers in each city. Administrative personnel just open their specially designed roadcase desks, plug in two cables, and can instantly begin using their computers and phones.

THE NEXT INFRASTRUCTURE ACT

As part of her efforts to streamline tour IT, Savoie decided to make the leap to voice-over-IP (VoIP) technology and replace cumbersome copper cable with fiber-optic cable.



(5) Since installing all of Cirque du Soleil's tour IT in customized road cases (6) with standardized cabling, connection time for the tour IT has been reduced by 25 percent. (7) A combination of ISDN and analog phone lines, plus a water and sewer hookup, are each locations' only connection to the outside world. An outside power failure wouldn't stop the show. (8) Danielle Savoie is Cirque's vice president of IT.

The fiber-optic cable is much lighter (Fontaine can easily carry 1,000 feet with one hand) and can handle both voice and data communications, eliminating the need for separate lines. "Having two virtual LANs on the same physical LAN is much easier to manage," says Fontaine. Using VoIP also puts more pressure on IT to make sure it offers 24/7 network availability, since all local box-office phone traffic now gets routed through the Cirque LAN. Switching to VoIP and a single cable for voice and data also reduces by 25 percent (eight hours) the time required to install the IT infrastructure on tour.

Savoie eventually plans to move to a

wireless infrastructure to further simplify the process of setting up IT on the tour (not to mention eliminate the danger of cables getting cut by forklifts). She first wants to make sure the technology is mature and can support the business goal of adding two new tours to Cirque's lineup in the next two years. She also wants to be sure that Cirque is ready for the change—and that she's proven the value of moving to the standardized, fiber-optic-based infrastructure before she tries to justify the expense of a wireless environment. "The best way to manage change is to deliver," she says. "Technology for technology's sake is not my bag. It has to add value for the business."

DELIVERING BUSINESS VALUE

The biggest challenge in changing the tour infrastructure, Savoie says, was to explain to Cirque executives the value of doing so. So far, the time savings gained from switching to VoIP and a single cable for voice and data is proof that standardizing tour IT has helped her trim tour support costs.

A business need—Cirque's merchandisers had been clamoring for better data from the tours—is driving Savoie's next tour IT project. She has been working closely with Cirque's vice president of merchandising to choose new point of sale software that will eventually link the cash registers on tour to SAP at headquarters in Montreal. That inte-

Rapid Deployment

9



10



11

12



(9-11) By the night of dress rehearsal, the IT systems are running smoothly and the point of sale machines flawlessly ring up sales. Years of practice, both by the performers and artists as well as the IT crew that supports them and the Cirque du Soleil enterprise, has paid off.

(12) The Boston premiere of *Quidam*, featuring this faceless embodiment of anonymity and namesake of the show, goes off without a hitch.

gration will let Cirque's merchandisers more effectively manage inventory (which includes funky hats, masks and CDs), identify best-sellers and fine-tune retail strategies. The new system will be rolled out at the three permanent shows and five touring shows during the next two years. Another piece of tour infrastructure—offering Internet access to the international cast and crew—boosts morale and gives tour personnel an easy way to stay in touch with family and friends.

WITHOUT A NET

Although Cirque never had any disasters with its old tour infrastructure, Savoie attributes that to pure luck. "It was not robust

and not well configured, but it worked," she says. While Cirque's artists perform without a net, Savoie isn't willing to do that in IT. Unlike the gravity-defying acts of Cirque's shows, Savoie wants tour IT to be as easy as possible, very stable and simple to manage. "The show must go on perfectly," she says.

On the premiere night of *Quidam*'s Boston engagement, the cast and crew—and the IT supporting them—are ready to put on a perfect show. As the capacity crowd of 2,600 fills the big top, the box-office trailer's nine ticket windows function efficiently, and the 28 cash registers hum as workers ring up giant pretzels and feather-festooned hats. The small village that has sprung up in the

East Boston parking lot is no island but a well-connected branch of the worldwide enterprise that is Cirque du Soleil. The lights dim. The ringmaster appears, redistributing popcorn among unsuspecting audience members and carrying a latecomer to her seat. The show has begun. **CIO**

Senior Writer Alice Dragoon can be reached at adragoon@cio.com.

CIO.COM Read about the traveling IT show on the PGA Tour and at tennis's U.S. Open in **MORE THAN FUN AND GAMES**. Find the story at www.cio.com/printlinks.



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Sending a Message

Instant messaging software goes corporate

BY JOHN EDWARDS

Edited by Christopher Lindquist. Send your thoughts and ideas for future columns to clindquist@cio.com.

WHEN THE EMPLOYEES at Avnet Computer Marketing want to send an important message to colleagues or customers, they don't necessarily reach for a telephone or e-mail. More often than not, the information is typed into an instant

messaging (IM) application. "You can just bounce a couple of lines across to somebody and get an answer," says Dave Stuttard, vice president of application solutions for the Tempe, Ariz.-based computer products distributor.

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IM software, long favored by gossiping teenagers, is now donning a suit and showing up for work. The software, popularized by programs such as AOL Instant Messenger, Microsoft's MSN Messenger, Yahoo Messenger, ICQ and IRC, is being adopted—albeit often reluctantly—by a rapidly growing number of enterprises. “I think you’re going to see IM use grow much faster than e-mail use,” says Michael Osterman, president of Osterman Research, a technology research company in Black Diamond, Wash.

ComScore Networks, a Reston, Va.-based audience ratings company, estimates that the number of work-based IM users rose 10 percent during the first six months

Osterman notes that enterprise adoption of IM technology is lagging far behind employee demand. “Only about 30 percent of companies have established a corporate standard for IM,” Osterman says. On the other hand, he notes, about 85 percent of companies have some level of IM activity.

Capitalizing on the fact that their products already contain an IM-type technology, conferencing and collaboration software vendors such as Groove Networks and Lotus Software are also entering the field. Lotus, which sells Sametime collaboration software, has already gained a solid foothold in the enterprise IM market. “Among organizations that have actually established a stan-

grade clients is that they can open a hole in the firewall,” says Osterman. “Then you have a path for viruses and malicious codes.”

Compatibility problems also plague IM. With a universal standard lying somewhere in the future, most IM products can’t display messages from competing systems. “[AOL IM] is a popular service in some departments, and MSN is popular in other departments,” says Kalehoff. “The problem is they don’t talk to one another.”

As if IM’s security and compatibility traps weren’t enough, CIOs must also worry that the technology will eat into productivity. After all, repeatedly pausing to answer messages and swat nuisance IM pop-ups isn’t a great way to focus. “You can specify that you’re busy, but you have an extra step not to be disturbed,” says Osterman. Employees are also likely to use the technology to chat with family and friends. “This is something that could be used as a time waster,” says Osterman.

Many businesses also deal with IM’s legal implications. This is particularly true in the financial industry, where Securities and Exchange Commission regulations require securities companies to record and log both IMs and e-mails. Although most enterprise grade IM products, such as Sametime, provide archiving capabilities, many financial industry CIOs would simply prefer to skip the complex job of tracking individual IM pop-ups. These CIOs have either banished IM from their organization or limited its use to purely administrative functions. “We’re not really communicating dollar figures or anything like that,” says Robert Stabile, senior technology officer at investment company J.P. Morgan Partners in New York City.

In fact, given the strong likelihood of technical and management headaches, CIOs at all sorts of organizations would simply like to exile IM technology. Many

Unlike e-mail, IM can deliver messages directly to a user’s desktop, where they’re likely to receive immediate attention.

of 2002, reaching 17.4 million active users. “The same services that people have early on adopted for use at home, mainly for social reasons, are now catching on at work,” says Max Kalehoff, a senior manager at ComScore.

Unlike e-mail, IM can deliver messages directly to a user’s desktop, where they’re likely to receive immediate attention. The technology can also be used for customer support and to simultaneously send messages to dozens or even thousands of users.

Yet as IM software enters the business mainstream, many CIOs are concerned that IM will open yet another door through which hackers can crawl. They also worry that IM will sap productivity.

Meet the Players

Despite the questions, IM’s popularity has drawn a variety of vendors into the field. And their easily downloadable tools often appear at enterprises that have yet to adopt a formal IM strategy. “Most of the IMing at work is done through the big-brand instant messaging services,” says Kalehoff.

dard, about 60 percent have established Sametime as the standard,” says Osterman. Unlike consumer IM software, Sametime provides several enterprise-class management and security features, such as integration with corporate directories and encryption.

Also entering the field are numerous pure-play IM startups, such as Bantu, Ikimbo and Jabber. These companies hope to beat the competition with IM multimedia messaging tools that span multiple platforms.

A World of Pain

The thought of employees flinging unencrypted messages through public networks, however, is enough to give almost any CIO the willies. The idea that external IM senders may be able to toss viruses and other types of destructive code into an enterprise is at least equally chilling. Although most enterprise-grade IM software offers some type of security mechanism, primarily encryption, many consumer-grade products—the kind brought in by employees without the IT department’s knowledge—don’t. “One of the problems with traditional consumer-

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already have. According to Osterman Research, 22 percent of companies block IM traffic from their network.

APL, a 12,000-employee containerized shipping company based in Oakland, Calif., put the hammer down on IM when employees began installing consumer-grade client software on their desktop. "We started to see that it was eating up bandwidth; we started seeing file transfers via instant messaging," says Van Nguyen, APL's IT security director. After determining that IM was more of a convenience tool than an essential business application, Nguyen and senior managers pulled the plug. "We have implemented a corporatewide security policy to disallow instant messaging clients—period," he says.

On the Other Hand...

While banning client software is an easy way of dealing with IM's problems, the move may also prove shortsighted. Many enterprises that have adopted IM are beginning to appreciate the technology's potential to actually boost productivity. Adopting a formal IM strategy also lowers the likelihood that employees will sneak in less secure consumer-grade products.

For all of its powerful potential, instant messaging also presents a darker possibility—IM spam.

At Avnet Computer Marketing, about 500 employees use IM for a variety of tasks. In one pilot project, for example, customers can use IM to contact technical people at the company. The software also reduces the need to place costly international phone calls. It's too early to tell just how much money IM is saving, Stuttard says, but he's sure that the technology is having a positive effect on the bottom line. Stuttard says that when all is said and done, the company hopes to reduce its number of voice mails and e-mails, while

providing faster turnaround on decisions.

IM's cost savings potential hinges mostly on how the technology is used. "If it was used primarily as a replacement for long-distance calls," says Osterman, "then the savings in telephone charges could be substantial in a large organization." Similarly, if the technology serves as an e-mail replacement or supplement, "there could be some savings in disk storage and related requirements," he says.

As time goes by, even Nguyen is contemplating a return to IM—but only under tightly controlled conditions. "We're looking to internal instant messaging servers," he says. APL's planned approach would place IM activities into an encrypted, VPN-type environment that would encompass only employees and selected external parties. "If it's a business requirement, definitely we would allow external partners to communicate with us," says Nguyen.

IM Integration

As IM becomes a deeply ingrained technology, messaging functions are likely to begin popping up inside all sorts of business-oriented applications, ranging from word processors to accounting applications. "For

example, you might see a future version of Microsoft Office that contains IM functionality," says Osterman. (Houston-based Advanced Reality already offers tools for adding collaboration to any application.)

One possible Microsoft strategy would be to add IM support to .Net Server, its latest server operating system. Code-named Greenwich, Microsoft's IM software will provide a variety of multimedia tools to connect users in real-time. "Greenwich envisions building on core presence capabilities to deliver IM, voice, video and data

Cool Product

Token of Ownership

KEEPING PRIVILEGED information on corporate laptops away from prying eyes may have just gotten easier.

Griffin Technologies of Lawrence, Kan., has released version 1.2 of its Universal Serial Bus-based authentication product, SecuriKey. The product requires users to insert a small SecuriKey token into a PC's USB slot and then type a password to gain access to the system.

The latest version adds a number of features designed to increase flexibility and manageability for IT administrators. The system supports multiple log-on profiles, allowing different access privileges depending on what key and password the user enters. Administrators can also set up a Token Not Required account that allows password-only access.

SecuriKey 1.2 also includes new automation features that speed the assignment of tokens to new profiles without manually entering the user code. The product includes new token removal features, allowing users to shut down their computer simply by removing the token.

Pricing begins at \$800 for a five-user package. For more information, visit www.securikey.com.

—Christopher Lindquist

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collaboration as a standards-based, extensible real-time communications solution," says Bob O'Brien, group product manager of Microsoft Windows .Net division. In the meantime, Yahoo has announced the release of its corporate instant messenger, which will include the capability to integrate with corporate directories and some applications.

Increasing enterprise adoption of IM is also likely to lead to new uses for the technology. Avnet's system, for example, allows technicians to communicate with customers on particularly difficult problems. NEC Solutions' Visual Systems Division, an Itasca, Ill.-based display products vendor, is using IM software to directly assist customers. "They can instant message their customer support rep and get the information they need instantaneously," says Fran Horner, director of the division's service sales group. The company's IM system even has the ability to transmit diagnostic software and fixes directly to a user's desktop.

Ultimately, enterprise IM will span an array of platforms, allowing users to conveniently contact people anytime, anywhere: on a desktop PC, PDA, mobile phone or other connected device. Several vendors, including Bantu and Jabber, already provide software with a multi-platform capability.

Still, for all of its powerful potential, instant messaging also presents a darker possibility. Avnet's Stuttard is one of a growing number of business executives who are pondering the technology's marketing potential. "You've got a channel now to send information and messages to a captive audience every day," he says. "That's very exciting because that's real target marketing—you're literally hitting every one of your customers every day."

Ladies and gentlemen, welcome to the world of IM spam. ■

John Edwards is a freelance writer based in Gilbert, Ariz. He can be reached via e-mail at john@john-edwards.com.



UNDER DEVELOPMENT

Data communications

Beyond Broadband

WI-FI WIRELESS networking may be all the rage today, but a broadband wireless standard known as ultrawideband (UWB) may one day become the technology that finally frees computers from wires and clears the way for easy, high-speed data synching among laptops, PDAs, desktops, and a variety of other consumer and enterprise devices.

Rather than transmit over a discrete frequency band as does Wi-Fi (802.11) networking, UWB uses brief, low-power pulses across a wide spectrum—up to 10GHz worth. This offers several benefits, says Kevin Kahn, Intel fellow and director of communications and interconnect technology for Intel Labs, which has been researching the technology. First, because data travels across a wide spectrum, the bandwidth is tremendous—"multiple hundreds of megabits per second at a distance of four to five meters," Kahn says. Second, because the technology uses little power, it is ideally suited for portable devices.

"The most obvious use is for wireless LANs in constrained environments where people can be close to the base stations," surmises Charles Golvin, senior analyst with Cambridge, Mass.-based Forrester Research. "It could also be used for high-speed synchronization between PDAs, laptops and cell phones." Golvin adds that it could be ideal for use in manufacturing and warehousing—tags could be put on pallets, for example. Beyond data transfer, the technology can "see" through walls and solid objects, so it may be used in rescue operations as a type of life-saving radar.

Some companies are readying niche products based on UWB. For example, Time Domain's version of the technology is currently part of a prototype radio that could determine the precise position and condition of stored ammunition for the U.S. Navy.

Despite the obvious benefits, widespread use of UWB applications is several years away. Intel's Kahn notes that it will most likely be two years before there is even an agreed-upon UWB standard, and then it will take some time before commercial products become available.

—Preston Gralla

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COMPANY TO WATCH

Acirro

Solving Storage Headaches

Acirro looks to simplify network attached storage management in complex environments

BY BEN WORTHEN

IT'S A REGULAR DAY at the office. Without a second thought, a sales manager e-mails his staff a spreadsheet with the monthly forecast, the marketing director casually distributes a PowerPoint presentation explaining a new campaign, and the CEO sends everyone in the company a picture of his kids' new puppy. Every recipient looks at the assorted attachments once (maybe twice) and promptly forgets about them. Well, almost everybody. The network administrator watches nervously as precious storage space disappears, fires off an e-mail reminding people to delete unnecessary files, and secretly seethes when nothing happens.

But San Jose, Calif.-based Acirro hopes to help these administrators out. The company's product, Acumula, simplifies the management of network attached storage (NAS) devices across the WAN and eliminates redundancy. But while Acirro makes a network administrator's job easier, the target audience is actually the CIO, who can use it to reduce costs.

Acirro does two things: First it routes all the NAS devices through one Acumula server so that an administrator can view all the activity across the WAN in one place. Second, it scans the network and eliminates storage redundancy, replacing duplicate copies with meta-data links to the actual file—potentially cleaning up 80 percent of the files that still need to exist but are rarely used. "Storage is a big issue right now, and [our] message is resonating with people who have a lot of files," says CTO Joel Harrison, who cofounded storage giant Quantum. "In the

Acirro

Headquarters San Jose, Calif.**Founded** 2000**Product** Acumula NAS manager**Reason to Watch** Storage management product could prove valuable to large corporations that currently own a diverse assortment of network attached storage devices.**Hurdles** Currently supports only Microsoft Active Directory; may ultimately need to create a partnership with large OEM to gain traction in the market.**URL** www.acirro.com

past, people would just throw hardware at the problem," but with Acumula you can actually manage it, he says.

Acumula requires you to add more hardware to your network, but once you do, you can get performance that Brian Chee, systems programmer for the department of information and computer sciences at the University of Hawaii in Manoa, deems "spectacular." Chee has a problem that could be viewed as a microcosm for the issues a Fortune 1000 company with multiple branch offices must endure. The university has distance learning classes that it distributes to 10 campuses on four islands. When you factor in more than 200 K-12 public schools, the university conducts distance learning with students across seven islands. Not surprisingly the connection speed varies from T1 and DS3 to 128KBps frame relay. Those performance differences can cause a problem when a

multitude of users at each location is trying to access 20MB to 30MB files. With Acumula, a file can either reside locally, at the main campus, or partly at the local node; the system is smart enough to automatically fetch the remainder whenever necessary. This helps keep WAN costs down, says Chee. As an added bonus, Acumula has a single mount point, allowing professors to drag and drop a file once and have it distributed across the WAN to multiple locations.

Chee points out that the technology is still new and that there are some kinks Acirro must work out, most prominently an authentication system that works only with Microsoft's Active Directory (the University of Hawaii uses lightweight directory access protocol). This shortcoming may be less of a problem for large companies that use the Microsoft protocol. Not surprisingly, Steve Kenniston, a senior storage technology analyst for the Enterprise Storage Group in San Jose, Calif., says that these companies are the Acirro target audience. Acumula, he says, can really help Fortune 1000 companies that have a lot of disparate NAS appliances they are not taking advantage of, although he doesn't think this will be a billion-dollar business.

Kenniston says he believes that Acirro will pick up traction when it partners with a strong OEM such as Dell or Compaq. Harrison, however, says it could be another two years before such partnerships happen, and for the next year at least Acirro will be focused on the direct sales channel.

Acirro has been forced to make other adjustments in the meantime. To secure its second round of funding, this past July the company was required to lay off a significant portion of its workforce. As storage management becomes an ever-higher priority for most CIOs, only time will tell if this streamlining will make Acirro a winner. ■

Do you know a company that other IT executives should read about? Send it to Technology Editor Christopher Lindquist at clindquist@cio.com.

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TECH TALK

Telecommunications

Wireless War Zone?

It's all happy-talk now, but wireless carriers and software vendors are headed for a showdown

BY CHRISTOPHER LINDQUIST

NEXT-GENERATION WIRELESS is finally underway in the United States, with the major players having launched their first stab at high-bandwidth communication. The software vendors are striking deals with carriers. The spiffy devices are on the shelves. And the participants are putting on a happy grin and hoping no one notices the sweat running down their face—or the knife they're holding behind their back.

As long as everyone's unsure whether the U.S. market can even profitably support advanced wireless data, no one's eager to start a war on another front. But if the wireless data space starts to take off, things could change in a hurry.

Software vendors have watched the commodity state of the wired Internet result in booming sales for their Net-enabled products. Those vendors need merely create software for one end of the Internet pipe or the other (or both); the network itself is irrelevant. For software vendors this is a serious boon, as low connection costs rapidly expanded the number of users—even while it meant watching ISPs lowball each other out of existence.

The wireless carriers are well aware of what happened to their wired cousins, and they're determined history won't repeat. So the carriers are all eager to “add value” wherever possible, keeping themselves in the chain by providing integration; additional features (such as GPS location-based services and voice recognition systems); development tools (like Sun's Java, Qualcomm's Brew and others); and even offering downloadable games, screen savers and ring tones. And the software vendors aren't



The wireless carriers are well aware of what happened to their wired cousins, and they're determined history won't repeat.

—Christopher Lindquist

complaining too loudly—yet. “We see that the carrier is an important piece of the value chain,” says Albert Chu, vice president of business development for mobile device software maker PalmSource. Chu notes that if the carriers want to control

10 apps, or even 50 apps, it will be up to his company to make its money by offering many other options—particularly more vertically oriented applications.

Given current minimal resistance, carrier control will probably be the norm for a while—especially when you consider that other wireless differentiators, such as support, network range and performance, didn't exist on the wired side.

Joseph Owen, CTO at mobile infrastructure management vendor XcelleNet, thinks, however, that it can't go on like this forever. “History would seem to indicate that [having two Internets] is futile,” he says, describing today's scenario of the Internet and the wireless Internet. He says clashes, as enterprise requirements meet the consumer mentality and as PC software libertarianism runs up against the more restrictive cellular mindset, are inevitable. The opposing views will need to be reconciled somehow, he says. “The wild card is, What will the enterprises put up with?”

Enterprises might not have as much bargaining leverage in the future as they do now, of course. Michael Doherty, senior wireless analyst at Ovum in Wakefield, Mass., says that an imminent wireless consolidation could help the carriers' situation by reducing the number of options for corporate buyers.

That may be true, but the price-cutting and “pipe-only” competition has already begun. Verizon dropped prices on some of its wireless hardware in the hopes of luring customers. Several carriers offer “all you can eat” options for data-only services that in effect give laptop users access similar to what they'd have at home with a DSL or dial-up line—with minimal interference from the carrier. The momentum has started, and as the wired market shows, the hill can get steep—fast.

There may be a long, shallow slope before the drop-off, however, as the players work to build a market first. “We're trying to create the pie,” says Jason Guesman, director of business marketing of Sprint's PCS division. “We'll duke it out later.” **CIO**

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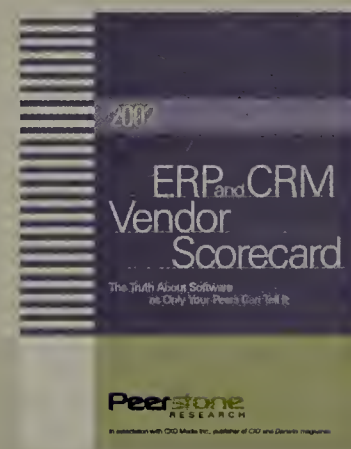
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How comfortable do you find the hot seat? E-mail Leadership and Management Editor Edward Prewitt at hotseat@cio.com.

Eight Strategies for Coaching Divisional CIOs

How one corporate CIO persuades rather than commands

BY ALICE DRAGOON

When Dana Deasy became vice president and CIO of the Americas for Siemens in 1999, he harbored no illusions that the job would be easy. His main responsibility has been coordinating the efforts of 22 CIOs across North and South America who don't report to him. Those CIOs are under pressure to put the interests of their own operating unit or region first. They equate anything corporate with overhead, intervention and loss of control. The CIOs all insist their business units are unique. After all, they point out, Siemens is a conglomerate of more than 14 independent and wildly diverse operating units. Deasy knew that to lead this bunch toward collaboration, common solutions and economies of scale, he'd have to be more coach than emperor.

Deasy had spent plenty of time on the other side of the corporate fence, most recently as a divisional CIO at General Motors. "It was my job to do the very same thing CIOs are doing to me today: to try to convey to corporate my view on why we needed to be unique," he recalls. His experiences, both good and bad, as a business unit CIO shaped his coaching strategies, which are designed to address the operating unit CIOs' inherent skepticism of all things corporate.

Coaching Tip 1: Listen

People can't be coached effectively if they don't believe they're being understood. Therefore Deasy contends that the number-one skill of an effective leader is the ability to genuinely listen—and to do so with a great deal of empathy. "They really have to believe that you're relating to them, that you really are understand-

ing their situation, their problem," he says. "You can't just sit there and say, Yeah, yeah, yeah, but now let me tell you what I need you to do."

As CIO of GM's locomotive group, Deasy felt frustrated when corporate types would seemingly ask for his opinion because they needed to include it in



Dictates won't do when dealing with free agents, says Dana Deasy, CIO of the Americas for Siemens. His task is to persuade 22 CIOs who don't report to him.

their documentation and check his name off a list, not because they were really going to take his perspective into consideration. He vowed he'd never do that to someone else if he ever went corporate.

Coaching Tip 2: Be Honest

It's important to acknowledge the natural



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tension in the corporate-divisional relationship. Deasy doesn't try to pretend that he's some sort of corporate Santa Claus. "I don't

think there's anything wrong with an effective coach standing right up front and saying, Let me tell you where we're going to have problems, conflicts, fundamental disagreements. And let me tell how I think we can establish some guidelines on how we'll work through this and always respect each other's point of view," he says.

Before launching into a difficult discussion with an operating unit CIO, Deasy warns him that they're about to have a conversation that's going to cause tension. "I want you to consider doing something that will give you a feeling that you're going to lose control," he tells the CIO. "You're going to be asked to be assimilated into something larger, and you may not see at first the financial value of doing so." That sort of honesty helps diffuse the tension, increasing the likelihood that the divisional CIO will be able to move beyond an emotional response and focus on the business issue at hand.

Coaching Tip 3: Avoid Power Plays

Deasy says it's tempting to just say, Come on guys, enough of this nonsense, we're just going to do this. But playing the corporate power card is a risky proposition. "If you play that card, you can work as hard as you want to reestablish credibility, but you'll probably never get it back completely," he says.

CIO.com Dana Deasy flies an astonishing 150,000 miles a year to keep in touch with the concerns of divisional CIOs and business unit heads. Go online to read **THE WORLD ACCORDING TO DEASY** to see how he does it. Find the article at www.cio.com/printlinks.

Coaching Tip 4: Create Trust

The people you're trying to coach won't be inclined to listen or respect your point of view unless they're convinced you truly have their best interests at heart. "Yes, you're trying to do what's best for the corporation as a whole, but if they really believe you are their trusted adviser, they will be willing to listen and be coached," says Deasy. On the other hand, "if they

on their side is to make a concerted effort to represent their point of view at the corporate level—even if you disagree. Deasy, whose office is in New York City, sometimes takes votes from CIOs on topics before he goes to corporate meetings, and he often shows divisional CIOs the materials he's planning to present before he heads off to corporate headquarters in Munich, Germany. Later, he'll share

EXECUTIVE PERSPECTIVE

The Value of Outside Opinion

Siemens CIO for the Americas Dana Deasy consciously seeks outsiders' perspectives when rating his operations. "You can give yourself all the data in the world and surround yourself with all the people in the world who will tell you why your operation is great," he explains. "But it's people who are not tied directly to your operation who will really give it to you straight."

A key lesson came early in Deasy's career at Rockwell International. He was convinced that he operated a grade-A help desk and had metrics to back him up. Yet that valuation was entirely from the IT perspective. A business-side vice president asked him to consider business factors as well. Once he did so, Deasy downgraded his self-evaluation to a C-minus. The vice president told him, "Now you have a chance to be a great leader."

—A.D.

believe you have a hidden agenda, they're going to fight you all the way." To that end, soliciting input from coachees *before* you make decisions is essential to creating an environment of trust.

After three years on the job, Deasy knows he's making progress gaining the CIOs' trust because it no longer takes weeks to convince them to get together to bounce around an idea. Now most agree to meet for a discussion after just one or two phone calls—and are willing to listen to each other and work together when they do convene. Perhaps more telling, the CIOs are now calling him more often to confide and ask his advice on sensitive topics.

Coaching Tip 5: Represent Rather than Judge

Another way to convince coachees you're

with them minutes of the meetings so that they can rest assured their views were presented, their voices heard as part of the larger corporate discussion.

Deasy finds that the CIOs are willing to listen if they think he really has empathy for their point of view, even if he's telling them they're likely to get nowhere or create more problems for themselves if they proceed as planned. He also coaches the CIOs on how to work with other executives by asking them the sorts of questions they can expect to hear when they take a proposal to the board.

Coaching Tip 6: Know When to Go over Their Head

Because the divisional CIOs don't report to Deasy, he can't fire someone for refusing to go along with what's best for the entire company. But he goes over their

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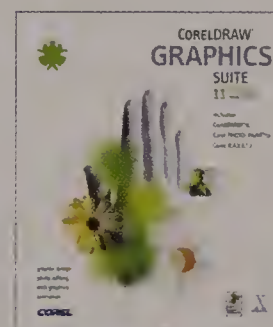
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head if he has to. In Latin America, a group of CIOs agreed to seek a single vendor for a common desktop-laptop contract for the whole region; all also agreed to go with the winning vendor. Then one country CIO wavered when his preferred vendor didn't come out on top. When this threatened to unravel the whole deal, Deasy took up the issue with senior management. "I had to escalate it in pure business terms, showing that if this country continued to go off on its own, we couldn't get the volume and the economies of scale in our purchasing, and therefore for the whole of Siemens it would cause financial harm," Deasy says. Management agreed, and the recalcitrant CIO abided by the regional contract.

Coaching Tip 7: Know When to Take a Loss

Deasy has learned that it's often not worth the effort—and even counterproductive—to try to win over someone who's really balking on an issue. Forcing an unwilling participant to take part in a discussion generally drags down the rest of the group. "All it takes is one operating company to be reluctant and it can take the positive energy right out of an idea," says Deasy. "Then you end up going away with no common solution."

In the past, when Deasy twisted arms to get people to participate in discussions, he ended up with reluctant observers instead of active participants. He once tried to get all five of the largest U.S. business units' CIOs to agree on a common operating system for desktop help desks. One already thought his was best-in-class and didn't want to participate. Deasy insisted, but having the CIO in the group proved detrimental. For every 10 reasons Deasy gave for moving to the common operating system, the CIO provided 10 reasons why it was a bad idea. The CIO never bought into

MANAGEMENT BRIEFS Turn Techs into Execs

Three steps for developing staff interpersonal skills

It's an old cliché that tech geeks lack social skills, but it remains true, says Sharon Gazda, president of Edizen, an executive coaching and management consultancy based in Springfield, Mass. When working with CIO wannabes, she finds them struggling over and over to develop the interpersonal skills needed to succeed in leadership roles. "The folks that best understand what networking means from a technology side are the least likely to understand people networks," she says. "They don't even see them."

To uncover specific skills that IT staff can use to transition from the basement cubicle to the executive suite, Gazda surveyed more than 30 executives earlier this year who had made the switch. These CIOs, CTOs and other CXOs were drawn from a cross-section of technology companies and companies with large IT workforces in New England and New York. From her one-on-one conversations, Gazda drew three lessons for managers of up-and-coming CIOs.

Connect the wetware. To understand the business as a whole, IT staffers must establish regular communication with internal and external customers. Yet "left to their own devices, techs prefer to keep to themselves. It is not their tendency to be out there interacting," Gazda says. Paul Donovan, executive vice president and CIO of Atlanta-based ING U.S. Financial Services, counters this propensity by designating his senior IT managers as "relationship managers" and pairing each with the head of a business unit. The IT managers in

effect join the business units, acquiring desk space and attending staff meetings, says Donovan, who participated in Gazda's survey.

Get out of the tech silo. Training conferences are a time-honored way for IT workers to update their technology skills. So why not management skills too? "The next time someone comes to you about a technology conference, say, That's great, but have you thought about negotiation skills or facilitation skills?" Gazda says.



Help workers get a life. The work-life balance is often hard, but Gazda believes techies are particularly prone to focusing on work at the expense of social contact. IT staffers "are more comfortable at a computer," she says. "They tend to have the attention span and attention to detail to stay there for hours." To combat this, she suggests that managers establish off-hours social activities and stay in touch with their employees' personal lives.

IT work "has big peaks and valleys; it's very demanding," Donovan says. "CIOs have to plan [IT work] to be a normal job, to take into account the difficulties." —Edward Prewitt



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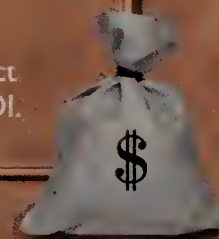
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the concept, and Deasy wound up with a sub-optimal agreement with the other four. In hindsight, Deasy thinks he could've convinced

the other four to do what he was recommending if he hadn't tried to go after all five. "I should've said if I can get four to participate, that's probably remarkable," he says.

Coaching Tip 8: Apply a Full-Court Press

Deasy is quick to share credit for the harmony and agreement he does achieve with his staff of five directors and 32 employees. These direct reports do a lot of coaching work by having initial conversations with the divisional CIOs that pave the way for corporate initiatives. Once the CIOs have time to mull things over, Deasy closes the deal.

"If you play the power card, you can work as hard as you want to reestablish credibility, but you'll probably never get it back completely."

—Dana Deasy, CIO of the Americas for Siemens

For Deasy, effective leadership in an environment in which you don't have direct control comes down to listening, cultivating trust and having integrity. "It's the only way you can effectively succeed—other than if you're purely so damned smart that they're going to want to use you because you just intellectually have something they need," Deasy says. "This CIO world is too complex and too diverse today to be too damned smart in everything." **CIO**

E-mail Senior Editor Alice Dragoon with feedback at hotseat@cio.com.

Leadership Agenda BY SUSAN H. CRAMM

The Business Knows Best

You can never be smarter than your customer



Stop and listen closely. There are voices in your department claiming to know more than your internal customers. These voices say things like, "They don't see the big picture," "They don't have a strategy," "They don't know what they want," and "They aren't really committed."

Logic tells us that this "IT knows best" attitude is ridiculous. Few IT professionals have grappled with the

challenges of meeting unreasonable profit targets in a tight economy. The tendency for IT to go it alone is really a defense mechanism, fomented by years of trying to serve a distracted and technically unsophisticated audience.

You would have thought that the era of the know-nothing user was over. After all, aren't we all now using terms like *business partner*, *customer* and *client*? Well, the fact that I still hear "IT knows best" voices and see these behaviors shows that it takes a lot more than wording changes to transform the underlying attitudes.

This point of view is dangerous because it drives a wedge between IT and the business, by undermining business authority in IT management under the guise of customer service, efficiency or strategic imperative. To illustrate how this facade of superiority impacts IT effectiveness, let's examine two critical processes.

STRATEGIC PLANNING. The "IT knows best" attitude results in the IT group determining strategy with minimal input or direction from the business. I am always surprised when my coaching practice clients have to be reminded that strategy is a participative process. Of course, I too made this mistake at one point, when I moved from strategic planning into a CIO role. I understood the business strategy and IT implications well enough—but my knowledge meant little since my business partners did not necessarily see things the same way. Instead of evangelizing and sponsoring initiatives, I needed to be educating and listening. Remember, the right strategy is one that has commitment from those responsible for delivering business results.

Often, CIOs face the challenge of defining IT strategy with little or no formally articulated business strategy. They sometimes respond by trying to document the "implicit" business strategy or even to drive business strategy development. It doesn't work. The IT organization cannot have a longer strategic horizon than that of the business. In cases like this, the best that IT can do is drive IT priorities from business priorities (by asking questions like, What do you hope to get done next year? and How do you measure success?). From that, the IT group can try to build something that lasts by understanding data and business processes and being a stickler on standards.

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When it comes to establishing annual priorities, CIOs sometimes make the mistake of tackling the job alone, by trying to reconcile the strategic plan with the tactical functional demands and the available funds. The CIO may be right in the initiatives that are the most promising and pressing, but the list of funded projects should include only those that the business leaders will fight for and the governance council approves.

PROJECT EXECUTION. Believing that "if we don't do it, it won't get done," IT sometimes justifies the project value for the project sponsor. In assuming the role of the customer, however, the IT group is threatening the potential success of the initiative. Better to let an initiative fall by the wayside than to start a project without the necessary business commitment and leadership.

When it comes to project execution, CIOs who follow the "IT knows best" approach assign IT managers to head up all projects and train systems analysts to drive the requirements definitions. While it's true that business managers are typically too busy managing the process to build strong expertise in project management or analysis, adopting these roles misaligns authority and accountability. It is IT's job to use its expertise and influence to coach the business on how to set up projects for success—by helping line managers strike a good balance among scope, approach, staffing and oversight.

In "IT knows best" organizations, the CIO is violating the rule that you can never be smarter than your customer. If you're lucky, your business partners will revolt and rebalance the roles. More often than not, though, they will be focused on the day-to-day business

demands and will let IT run the show. But when results are less than expected, IT will be left (rightly) holding the bag. Anytime you hear the "IT knows best" voices and see your organization taking on the role and authority of the customer, you know that your organization is out of step and at risk.

Reader Q&A

Susan Cramm answers questions on "The Business Knows Best"

Q: I agree with your assessment. But how do you handle changes in technology where the users may not be as aware as the IS group? In most of these cases, the users cannot visualize the future.

A: Check your language here. The users can most certainly visualize the future—within their area of expertise, just as IS can visualize the future of technology. The challenge is for both sides of the partnership to educate each other. For example, IT professionals should spend time shadowing key frontline business performers while exposing their business partners to innovative, potential applications of technology from comparable industries or functions.

Q: I work for a company where we in IT truly believed the business knows best. The business side was allowed to define the requirements and solutions and manage the implementation projects. IT's role was designated as "technical only." The result is that we now have nine different systems (including SAP). The business blames IT because of the problems it had in trying to integrate the data. Where did we go wrong?

A: The pendulum swings both ways. I am guessing that in an attempt to increase IT service levels, business managers were given authority in

areas where they really don't know best. IT needs to retain the authority necessary to ensure that IT is done right. In centralized IT organizations, this means that at a minimum, IT should have authority over policies, standards and processes in the areas of IT strategy, portfolio and investment management, architecture, security, project delivery, performance monitoring, and human resources.

Q: While I agree with your basic premise, in the past three to four years the profile of the IT department has significantly changed, especially after the ERP wave with its focus on functional consultants doing the job. For example, in my company, which has implemented SAP big-time as well as CRM and KM, our consultants have a strong business background. This has resulted in IS proposing and driving many new initiatives, which the users have welcomed and benefited from. While knowledge of the nuts and bolts of the business may still reside with the business side, the new-look IS department knows how to align technology with business, with a resultant high ROI on IT initiatives.

A: Moving professionals between IT and the business is an excellent mechanism to increase alignment—provided the transferred employees don't try to play both roles. As business professionals move into IT, they cannot act as surrogate users by defining and prioritizing requirements. The only people who can define business value are those currently responsible for delivering business results. **CIO**

To ask Susan H. Cramm questions, go to www.cio.com/leadership/agenda.html. Cramm, a former CIO at Taco Bell and former CFO at the Chevys restaurant chain, is president of Valuedance, an executive coaching firm based in San Clemente, Calif. Her e-mail address is shcramm@aol.com.



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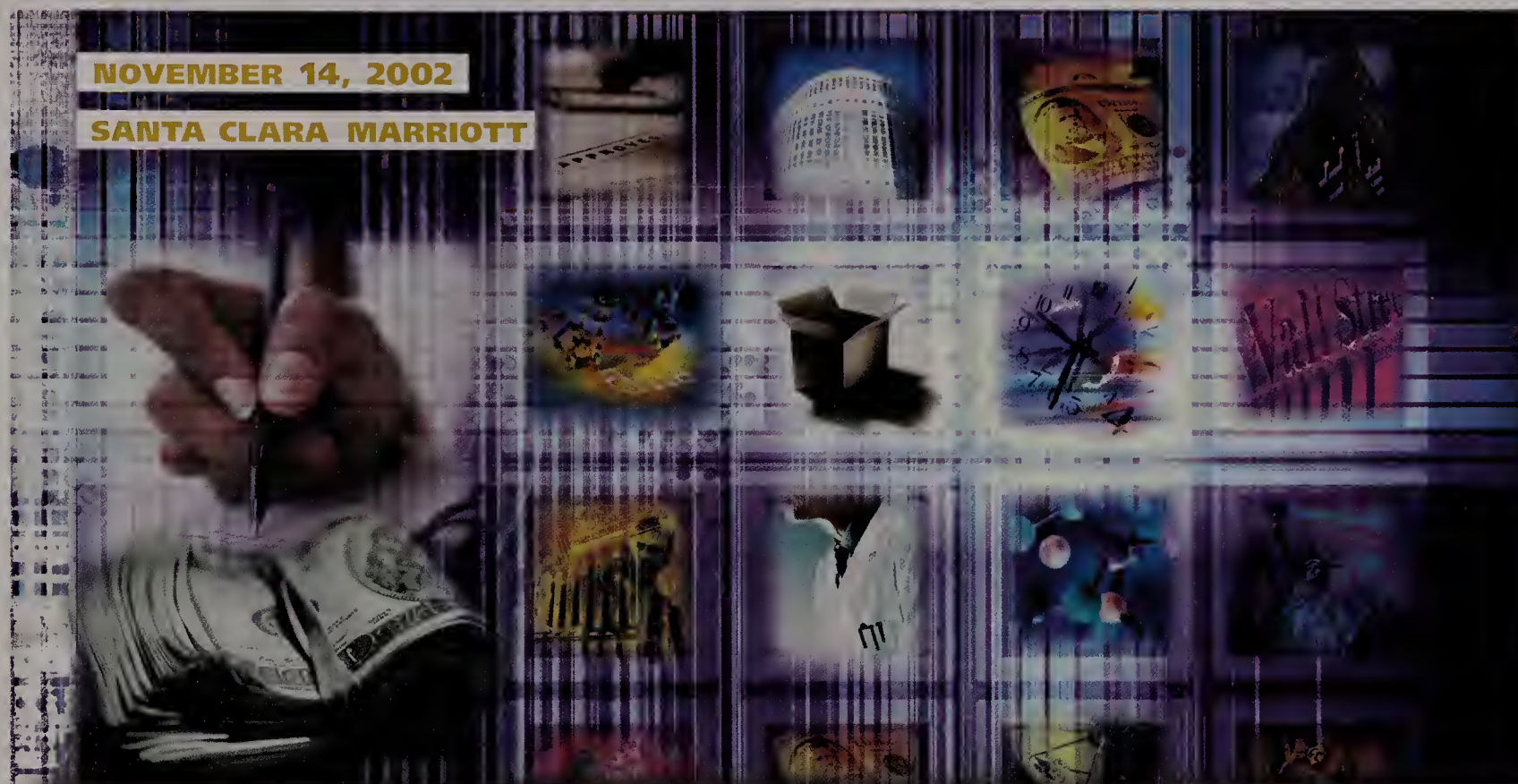
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EXECUTIVE Summaries

NOVEMBER 1, 2002

COVER STORY | American Airlines' Turnaround

By Todd Datz | 56

To help American Airlines regain altitude in the turbulent commercial airline industry, Monte Ford, American's CIO, must manipulate the IT investment portfolio to squeeze millions from operating costs while coping with a \$50 million cut in an IT budget that continues to nose-dive. He also faces the need to redevelop internal IT leadership as he pieces together a department from the remnants of longtime partner Sabre, which sold its outsourcing business. Not to mention the massive integration of TWA, completed last year. Delaying such long-term projects as maintenance, engineering wireless apps and a parts inventory project, Ford has focused on customer service apps, including airport kiosks and wireless check-in, a new website, and converting paper processes to electronic. The resulting productivity savings will be significant, and the conveniences may mitigate recent airport hassles. But will it be enough? American CEO Don Carty says the airline must cut at least \$3 billion annually in structural costs during the next several years.

"What I've learned in business is that it's not a question of what things will happen to disrupt your plan. It's a question of how you respond to those things when they do, because they will."

—MONTE FORD, SENIOR VP AND CIO,
AMERICAN AIRLINES

Quick Win IT

By David L. Margulius | 68

IN THE CURRENT ECONOMIC CLIMATE, IT executives are pushed hard to provide a quick return on small, well-planned technology investments. Vendors, smelling opportunity, have jumped in with a wide array of low-cost, quickly deployable products and services. Simple products and services costing between \$50,000 and \$200,000 will return in a matter of months many times more in savings in such categories as infrastructure management, bandwidth optimization, Web services-based integration, and voice and data transmission. Caveats include the need for thorough testing for scalability and fit, avoiding related or ongoing investments, and managing expectations—don't call it a quick win project. Let it be a nice surprise.

Security and Privacy Compliance

By Ben Worthen | 76

IF IT HASN'T ALREADY, privacy and security legislation will affect your industry, and CIOs must plan for compliance now because compliance deadlines have a habit of sneaking up fast. Although the final form of the Health Insurance Portability and Accountability Act (HIPAA) was not expected to be published until October 2002, CIOs have been moving forward with commonsense projects likely to be required in the final legislation. For example, the University of Arizona Medical Center piloted a biometric-based sign-on system for doctors. When St. John Health upgraded its desktops in order to ensure that no patient data could be stored on C drives, it also standardized on one desktop configuration, simultaneously meeting a probable HIPAA requirement and making the IT support staff's job much easier. Guideposts for advanced compliance can be found by comparing pending legislation against previously passed laws. Many of the HIPAA proposals, such as electronic signature guidelines, are similar to those in recent Medicare legislation.

Case Files: A University's KM Portal

By Meridith Levinson | 85

THE UNIVERSITY OF MARYLAND'S Robert H. Smith School of Business lacked the proper infrastructure to support its 3,500 students and faculty on both its main and satellite campuses. E-mail was the only way to share ideas and edit documents, and students had as many as 16 user names and passwords for the online courses and systems they used regularly. Then the school invested several million dollars to create a Web-based knowledge management portal to allow the students, faculty, staff and external partners such as alumni, other academic institutions and businesses, access to all the services, research and applications they needed. Now it takes one password to register for classes, post and read syllabi, download white papers, run and participate in online classes, and share research. Hurdles included giving access to users who were not in the university directory and integrating siloed campus systems to provide automatic access via a single log in. Though not yet fully implemented, professors have managed more than 50 courses via the portal.

Electronic Invoicing

By Elana Varon | 91

WHILE MOST B2B TRANSACTIONS currently focus only on the purchase order, the next logical e-business step in efficiency is electronic invoice presentment and payment (EIPP)—the sending and receiving of digital invoices. Benefits include cheaper invoice processing, fewer billing errors, better cash flow, and more timely and accurate data for analysis. Gartner estimates that EIPP users can save an average of \$5.7 million a year. To derive the most value, companies must integrate EIPP systems with back-office applications like ERP, purchasing, accounts payable, order management and call center. That can be tough. It took GE and vendor DataCert six months to write custom formats so that invoice data could be delivered electronically to three different GE systems.

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